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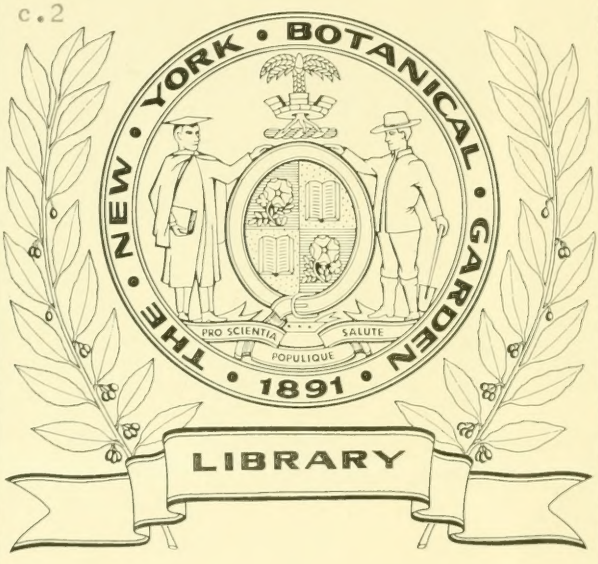

MATERIALS FOR A

FLORA OF THE MALAYAN PENINSULA

PART III

H. N. RIDLEY, M.A., F.R.S., F.L.S., F.R.H.S.
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SINGAPORE, S.S.

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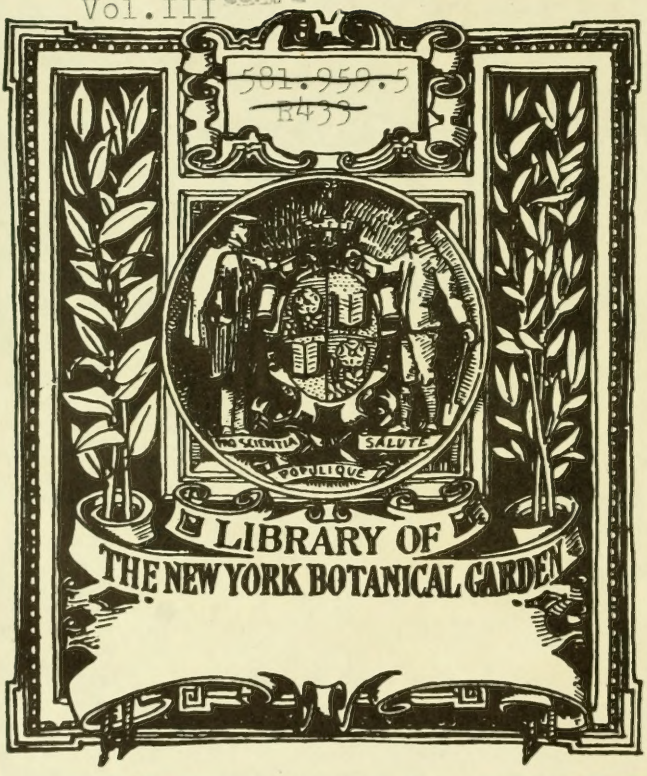

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Materials for a Flora of the Malayan Peninsula

by

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AUG 17 1965

Materials for a Flora of the Malayan Peninsula.

PART III.

XXI. ARACEAE.

Herbs ... t tuberous or with a creeping rhizome or scandent shrubs. Leaves alternate petioled, petiole sheathing at base or for its whole length, lamina herbaceous or coriaceous entire or lobed. Flowers uni- or bisexual sessile spicate, on a spadix more or less enclosed in a green or coloured spathe. In unisexual plants, the males are at the top of the spadix the females at the base, with usually abortive flowers (neuters) between them. Perianth lobes scale-like or absent. Anthers 2-4 celled dehiscing by pores or slits. Ovary sessile 1-3 celled. Style usually short. Stigma discoid, or lobed. Ovules 1 or more. Fruit baccate rarely capsular. Seeds few or 1 rarely numerous usually imbedded in pulp. Albumen absent or plentiful.

Species about 1000. Whole world but most in the tropics.

(A.)

Flowers monoecious (occasionally dioecious in *Arisaema*).

Perianth absent.

Tribe I. ARINEAE. Spadix with an appendage (except *Pistia* and *Cryptocoryne*). Stamens free, ovary 1 celled, ovules orthotropous.

Floating stemless herbs	1. *Pistia.*
Submerged or marsh plants. Spadix very short, spathe long tubular	2. *Cryptocoryne.*
Terrestrial tuberous herbs often unisexual. Neuter flowers few or none	3. *Arisaema.*
Bisexual. Neuters numerous above the females	4. *Typhonium.*

II. PYTHONIEAE. Tuberous herbs, flowering before leafing. Leaves pinnatifid. Spadix usually appendaged. Ovules anatropous.

Appendage large .. .. 5. *Amorphophallus.*

III. COLOCASIEAE. Leaves undivided, cordate, sagittate or peltate. Spadix appendaged or not. Anthers sessile, free or connate, connective thick.

Female portion of spadix adnate to spathe .. 6. *Hapaline.*

Spadix free to base.

Ovules many parietal, fruit sub-capsular .. 7. *Colocasia.*

Ovules few basal, fruit drupaceous .. .. 8. *Alocasia.*

IV. PHILODENDREAE. Terrestrial herbs, leaves entire. Spadix shorter than spathe, no appendage. Fruit enclosed in the spathe tube.

Spathe eventually deciduous. Fruit a red drupe .. .. 9. *Aglaonema.*

Spathe persistent. Fruit very small .. 10. *Homalomena.*

Upper portion of spathe deciduous in flower contracted in the middle .. .. 11. *Schismatoglottis.*

Spathe not contracted in the middle .. .. 12. *Piptospatha.*

(B.)

Flowers bisexual, no perianth.

V. CALLEAE. Climbers often woody. Spadix with no appendage. Ovary truncate. Stigma linear central.

Perianth usually present. Drupes distinct red .. .. 13. *Anadendrum.*

Perianth absent, fruits crowded. Ovary one celled .. .. 14. *Scindapsus.*

Ovary 2-3 celled, seed 2 or more .. .. 15. *Raphidophora.*

(C.)

Flowers bisexual. Perianth of four to 6 segments.

VI. ORONTIEAE.

Prickly herbs.

Spadix much shorter than the long spathe, sessile .. .. 16. *Lasia.*

Spadix nearly as long as spathe stipitate ..	17. *Podolasia.*
Spadix subsessile	18. *Cyrtosperma.*
Climbing plants not prickly	19. *Pothos.*
Rhizomatous plant with ensiform leaves and no spathe	20. *Acorus.*

1. Pistia, L.

A floating herb stemless, but stoloniferous. Leaves sessile obovate obcuneate erect. Spathe shortly peduncled small, base tubular limb ovate, enclosing one flask-shaped pistil with short stigmatic processes. Anthers 4 globose sessile connate, in a basin-shaped spathel. Fruit membranous few seeded, ovules many. Seeds oblong or obovoid albuminous, testa rugose. Embryo minute.

Species 1. All the Tropics.

P. Stratiotes, L. Sp. Pl. 963. Roots tufted white with numerous fibrils. Leaves bright green, obovate spathulate cuneate, apex rounded, ribbed beneath pale, pubescent ½-3 inches long, ¼-1½ inch wide. Spathe tomentose white, base campanulate limb ovate about half an inch long. Roxb. Corom. Pl. III. 63, t. 269. Fl. B. Ind. III. 131. Griff. Notul. 12, 211. Ic. Pl. As. t. 260, 261. Bot. Mag. t. 4564. Hook. fil. Fl. Brit. Ind. VI. 497.

Commonly cultivated in Singapore by Chinese to feed pigs. Possibly wild in the river at Batu Pahat, Johor, and Pahang (Mahang, Ridley 1309). Native name "Kiambang" or "Kambiang." Distribution all tropical countries.

2. Cryptocoryne, Fisch.

Aquatic herbs with a short or long creeping rhizome. Leaves herbaceous or leathery, petiole sheathing at base. Spathe tubular with the edges connate, with a lanceolate or ovate coloured limb. Spadix very short in the dilated tubular base of the spathe. Male portion conic wrapped in an involute valve of the spathe. Anthers 2 celled, cells perforate at the tip. Female flowers few in a single whorl, perianth 0. Ovaries flask-shaped many ovuled. Styles short recurved. Ovules erect orthotropous. Fruit capsular or connate 2 valved carpels, seeds numerous.

Species about 25. India, Malaya.

Leaves leathery lanceolate erect	1. *C. ciliata.*
Leaves thin ovate or lanceolate floating.	
Spathe tube much longer than the limb.	
Tail of limb short, limb lanceolate yellow ..	2. *C. cordata.*
Tail of limb short, limb ovate purple ..	3. *C. purpurea.*

Tail of limb longer than the tube .. .. 4. *C. pontederiaefolia.*
Tube of spathe as short or shorter than limb.
Limb ovate tailed .. .. 5. *C. Griffithii.*
Limb narrow lanceolate twisted .. .. 6. *C. affinis.*
Limb lanceolate not tailed .. .. .. 7. *C. elliptica.*

1. C. CILIATA, Fisch. Schott. Melet. 16. Tuberous and stoloniferous. Leaves erect fleshy leathery petiole stout 18 inches long, laminae 6 to 14 inches long 2 inches wide lanceolate or linear oblong dull dark green. Scape short. Spathe 4 to 12 inches long. Limb oblong cuspidate 2-3 inches long fimbriate yellowish or purple with purple fimbriae. Spadix male portion cylindric blunt rather thick. Female flowers about 5 to 7. Stigma oblong. Fruit globose conic on a fairly long peduncle, 1 inch through 6 to 8 seeds. Kunth. Enum. III 12. Schott. Aroid. 7. Syn. 2. Prodr. 15. Bonplandia 1857, 222. Wight. Ic. t. 775. Griff. Trans. Linn. Soc. XX. t. 10-12. Blume. Rumphia I. 86. Engler Araceae 624. Hook. fil. Fl. Brit. Ind. VI. 492. *C. elata,* Griff. Notul. III. 134. Ic. Pl. As. t. 170, 171. *C. drymorhiza,* Zipp. Miq. Ann. Mus. Bot. i. 122. *Ambrosinia ciliata,* Roxb. Corom. Pl. III. 90. t. 294. Fl. Ind. III. 491.

Singapore: Kranji, etc.; Johor: Batu Pahat (Ridley); Malacca (Griffithii); Tringganu (Ridley); Penang: Pulau Betong (Curtis 1940). Distrib. India, Borneo, Java. In mangrove mud and brackish ditches near the sea, more rarely in ponds. Very abundant but rarely to be found in flower.

2. C. CORDATA, Griffith Notulae. III. 138. Ic. Pl. As. t. 172. Submersed herb with a slender rhizome. Leaves ovate to oblong ovate undulate thin blunt 2 inches long 1 inch wide, base cordate olive green above, paler and reddish beneath, petiole 6 inches long olive and white. Scape 1 inch long white. Tube of spathe 7-8 inches long dilated at base, ribbed white $\frac{3}{16}$ inch through, limb lanceolate caudate, bright yellow above, tail and back of limb fuscous, 2 inches long $\frac{3}{8}$ inch wide. Spadix $\frac{1}{2}$ inch long, tip covered by an oblong truncate valve, yellow. Male portion cylindric pale yellow, flowers wedge shaped, top flat with 2 projecting anthers, appendix curved club-shaped blunt adnate to the valve, nude portion of the spadix thin white. Female flowers connate in a cone $\frac{1}{4}$ inch tall. Styles short and broad. Stigmas oblong retuse at tip, a circle of 6 rounded yellow bodies above the pistils below and inside the circle of styles (abortive female flowers). Hook. fil. Fl. Brit. Ind. VI. 493. Schott. Syn. 2. Prodr. Aroid. 14. Bonplandia 1857, 220. Engler Arac. 626. Icones. No. 6; Malesia I. 298. N. E. Bl. Journ. Linn. Soc. XIII. 242.

Malacca (Griffith), Jus (Goodenough 1514), Bukit Sadanen (Derry 348), Sungei Udang (Derry 177). Distrib. Borneo and Java.

Native name "Ati-Ati Paya." In forests streams. The leaves ground up are applied to the head in native medicine for headache.

3. C. PUPUREA, Ridl. Journ. Roy. As. Soc. S. Br. Vol. 41. p. 44. Stems creeping stoloniferous. . Leaves ovate or elliptic ovate base broad 3 inches long by 1¾ inch wide petioles 4 inches long. Peduncle short about ½ inch long. Spathe 3 or more inches long tube twisted ¼ inch long through white, limb ovate caudate ½-1 inch long ½ inch wide deep purple brown with a yellow mouth pustular, tail ½ inch long. Valve oblong truncate pale yellow. Female flowers 6 to 8 connate in a circle. Styles very short, stigmas discoid, neuters above the pistils 5 or more, bare portion of spadix slender. Male flowers few yellow obcuneate. Appendix small elliptic clubbed. *C. Griffithii,* Hook. fil. Bot. Mag. 7719, not of Schott.

Johor: Kota Tinggi (Ridley 4214). This is closely allied to *C. Griffithii* but differs in its more numerous pistils, and smaller appendix while the tube of the spathe is very much longer. Endemic.

4. C. PONTEDERIAEFOLIA, Schott. Miq. Ann. Mus. Lugd. Bat. I. 122. Stem as in the last species. Leaves ovate cordate with distinct auricles, margins undulate, 2 inches long by 1½ inch wide, petioles 3 inches long, sheathing for ⅓ of the length. Scapes very short. Spathe tube 4 inches long rather stout dilate at base, limb ovate lanceolate 1½ inch long half an inch wide with a tail 5 inches long deep purple. Fruit obconic on short scapes, pistils 5. Seeds elongate cylindric longitudinally ribbed. Engler. Arac. No. 24. Monogr. p. 627.

Johor: Between Johor Town and Gunong Pulai (Ridley's Coll. 3721). Rare. In slow running streams. Distrib. Sumatra.

5. C. GRIFFITHII, Schott. Syn. Aroid. I. Prodr. Syst. Aroid. 14. Stem creeping and surculose. Leaves ovate undulate floating dark olive above pink beneath 2 inches long 1¼ wide, petioles 4 to 5 inches long. Scape about 1 inch long white. Spathe tube cylindric base dilate 1½ inch long white, limb ovate cuspidate papillose dark red. Spadix short. Female portion conic, ovaries connate pustular 6. Styles short and thick. Stigmas elliptic. Barren portion slender. Male flowers oblong. Capsule conic cordate 6 lobed pink with persistent styles ½ inch long. Engler. Arac. 631. N. E. Br. in Journ. Linn. Soc. XVIII. 244. Hook. fil. Fl. Brit. Ind. Vol. VI. p. 493. *Cryptocoryne,* sp. Griff. Notul. III. 139. Ic. Pl. As. t. 173, f. 3.

Singapore: Tanglin, Kranji, Mandai, Chan Chu Kang (Ridley 3936); Johor: Ulu Batu Pahat (Kelsall); Malacca: Tabong (Griffith), Bukit Sadanen (Derry 348). In slow streams in dense jungle. The spathe submerged up to the limb. Endemic.

6. C. AFFINIS, N. E. Br. in Hook. fil. Fl. Brit. Ind. VI. 494. Leaves lanceolate oblong subcordate obtuse bullate 2 to 3 inches long by ¾ inch to 1 inch wide green above purple beneath. Peduncle ½ to 1 inch long. Spathe tubular 3 inches long by ¼ inch through, base swollen, laminae narrow lanceolate 2 to 2½ long spirally twisted. Spadix appendage ovoid. Carpels 6 to 7 very many ovuled.

Perak (Scortechini 586). Endemic.

7. C. ELLIPTICA, N. E. Br. l.c. p. 495. Leaves orbicular or ovate cordate blunt 1½ inch long 1 inch wide scabrid, petiole slender 2 to 3 inches long or less; green above brown beneath. Spathe tube 1½ inch-2 inches long slender, on a peduncle ½ inch long hardly lengthening in fruit. Limb smooth not papillose, lanceolate black ½-¾ inch long, twisted and bent back at apex. Fruit 6-celled small little over ¼ inch long.

Perak: Larut (King's Collector 3166), Sungei Larut (Wray 2459). Allied to *C. Griffithii,* but much smaller in all its parts. Endemic.

C. sp. Leaves narrow lanceolate acute bullate 3 inches long, by ½-¾ inch wide margins undulate petioles slender 2 inches long. Stems rather stout an inch long.

Pahang: Tahan River (Ridley 2386). I was unable to find any flowers or fruits of this, but it is a very distinct looking plant.

3. ARISAEMA, Mart.

Tuberous herbs with one or two petioled trilobed or pedatisect leaves. Spate tube convolute limb broad usually tailed. Spadix included or exserted, with an appendage usually filiform and often very long. Male flowers numerous stipitate, anthers 2 to 5. Females densely crowded, ovary 1 celled. Ovules 2 or more orthotropous. Style short or absent stigma discoid. Neuters absent or on the appendage or above the males or females, subulate. Berries one or few seeded. Seeds albuminous.

The species of the Malay Peninsula are mostly dioecious.

Species about 50. Asia temperate or tropical and North America.

Leaves trifoliate.

Appendage shorter than the limb.

Spathe limb ovate lanceolate.

Leaves 1 or 2. Leaflets broad at base	1. *A. Roxburghii.*
Leaves 1. Leaflets narrowed at base	2. *A. Kunstleri.*
Spathe limb broadly ovate	3. *A. anomalum.*
Appendage long fimbriate	4. *A. fimbriatum.*

Leaves pedatisect.

Limb of spathe very large longer than tube 5. *A. Wrayi.*
Limb of spathe shorter than tube .. .. 6. *A. Scortechinii.*

1. A. Roxburghii, Kunth. Enum. II. 18. Leaves 1 or 2 enclosed with the scape in a sheath 2 inches long, petiole tapering upwards 8 inches long grey marbled transversely with red, leaflets ovate acuminate light green, 5 inches long 2¼ inch wide, petiolules of side leaflets ¼ inch long, of terminal leaflet, ¾ inch. Peduncle 7 inches long slender mottled pink. Spathe tube 1 inch long dull pink lamina ovate acuminate curved yellowish green 1 inch long ½ inch wide. Spadix short filiform 1¼ inch long appendix acuminate ¾ inch long base dark green appendage yellowish, anthers 4 to 5 in a cluster, scattered. Fruit spike 2 inches long. Schott. Syn. Aroid. 27. Prodr. 33. Hook. fil. Fl. Brit. Ind. VI. 497 *A. cuspidatum,* Engler Arac. 536. *Arum cuspidatum,* Roxb. Fl. Ind. III. 506. Wight. Icones t. 784.

Selangor: Kuala Lumpur Caves (Ridley); Pahang: Kota Glanggi Caves; Perak (Scortechini); Penang (Roxburgh), Government Hill (Curtis 1882); Perak (Scortechini); Lankawi Islands (Curtis). Distrib. Java. On rocks and banks.

2. A. Kunstleri, Hook. fil. Fl. Brit. Ind. VI. 497. Tuber subglobose, stem 5 inches long covered with sheaths. Leaves solitary trifoliate, petiole graceful 7-10 inches long green mottled red, leaflets ovate lanceolate acuminate base narrowed thin inaequilateral, nerves about 10 pairs, 4½ inches long, 2 inches wide petiolules of side leaflets ⅛ inch long of central one ½ inch. Peduncle 6 to 7 inches long mottled grey lamina narrow elongate lanceolate acuminate green with darker streaks, contracted at the base. Male spadix very slender, appendage very slender. Flowers scattered. Anthers ovoid, 1, 2, or 4 together very small madder pink, with one or two pink processes (neutral flowers) at the base of the appendage. Female flowers pistils numerous hemispheric green. Style semiglobose. Fruit spike 1 to 2 inches long.

Perak (Kunstler), Taiping (Derry); Penang (King's Coll. 1653), Penara Bukit (Ridley 7246), Government Hill (Curtis 2887). Endemic, or rocks and banks. A more slender plant, with smaller leaves, and rather different in colour from the last, but possibly only forms of one species.

3. A. anomalum, Hemsl. Journ. Bot. 1887, 205. Tuber elongate shortly rhizomatous. Leaf 1 or 2, 18 inches tall trifoliate, petiole slender a foot long, leaflets ovate acuminate cuspidate inaequilateral, 5 inches long, 2 inches wide rather fleshy, petiolules ¼ to ½ inch long. Scapes 8 inches long, base sheathed. Spathe 2 inches long tube

cylindric 1¼ inch long lamina broad ovate cuspidate arched, edges round the mouth everted 1 inch long dark purple. Spadix little longer than the tube, appendix filiform, neuters above the male flowers subulate. Male flowers stipitate 4 celled, 5 or 6. Females, pistils globose stigmas sessile. Hook. fil. Bot. Mag. t. 7211. Fl. Brit. Ind. VI.

Perak: Larut Hills (Wray, Curtis 3714), Hermitage Hill (Ridley 2951), Ulu Batang Padang (Wray 1500). Among rocks at an altitude of from 3-5000 feet. Endemic.

4. A. FIMBRIATUM, Masters in Gard. Chron. 1884 II. 680, f. 119. Tuber hemispheric ¾ inch through. Leaves 2, trifoliate glaucous beneath leaflets broadly ovate cuspidate, slightly inaequilateral 6 to 7 inches long 5 inches wide, petiolules ¼ inch long, petiolules stout 6-8 inches long. Peduncle 8 inches to a foot long glaucous. Spathe 4 to 8 inches long tube 2-3 inches long stout, lamina ovate acuminate arched nearly 3 inches long deep purple red. Spadix 9 inches long slender, appendage filiform very long covered with subulate processes, purple male portion of spadix 2 inches long, flowers pedicellate 6 celled scattered. Female portion ½ inch long, flowers close together, ovary subglobose, stigma discoid. Regel. Garten. Fl. 1886, 357, f. 40. Bot. Mag. t. 7150. Journ. of Horticulture 1886, f. 19. Hook. fil. Fl. Brit. Ind. VI. 502.

Lankawi Islands (Curtis); Pahang: Kota Glanggi among limestone rocks (Ridley). Distrib. Southern Siam.

5. A. WRAYI, Hemsl. Journ. Bot. 1887, 205. Tuber rounded, with numerous roots. Leaf pedatisect, petiole 8 inches to a foot long reddish with transverse lighter patches, lobes 4 to 8 narrowly lanceolate or elliptic lanceolate, acuminate, 6 to 8 inches long ½-1½ inch wide, deep green, petiolules ½ inch long on lateral leaflets to 1 inch long on central one. Scape about 1½ feet long mottled. Spathe large tubular portion about 3 inches long thick margins very broad deflexed, limb broadly ovate acuminate 4½ inches long by 2 inches wide light green. Spadix with a long filiform appendix over 6 inches long pale green.

Perak: Larut Hills (Scortechini No. 262), Wray, Hervey, etc., at an altitude of about 4000 feet.

6. A. SCORTECHINII, Hook. fil. Fl. Brit. Ind. VI. 503. Tuber oblong. Leaf solitary or 2 petiole, about 4 inches long pale with transverse reddish bars, limb of 3-6 lobes, linear or lanceolate acuminate deep green with 2 longitudinal white bars 6 to 7 inches long ⅜ to 1 inch wide, the central one largest, petiolules ¼ to ⅓ inch. Scape 13 inches long pale with transverse reddish bars and 1 or 2 thornlike processes above. Spathe tube cylindric green margins broad

recurved, lamina ovate 1 inch long by ¾ inch wide, yellow stripe and tipped with green. Dioecious. Male spadix 2 inches long, appendix filiform short barely projecting beyond the tube yellow. Stamens scattered, 3 pink anthers connate on a short peduncle. Female not seen. Drupes ¼ inch long.

Selangor: Bukit Hitam, Pahang Track at the 15th mile (Ridley); Perak (Scortechini), (King's Collector), Bujong Malacca (Ridley); Penang: Government Hill (Curtis 143). Endemic, in forests.

A. sp. Leaves 2, petioles 6 to 8 inches long slender leaflets 5, the two laterals lanceolate acuminate acute, inaequilateral 4 inches long by 1½ wide, the others ovate lanceolate, the central one 5 inches long by 3 inches wide cuspidate, petiolules very short ¼ inch except central one ½ inch long. Scape slender 6 inches tube or spathe stout, over 1 inch long, limb gone.

Perak: Bujong Malacca (Ridley). Apparently a distinct species but the materials are insufficient for description.

4. Typhonium, Schott.

Herbs tuberous. Leaves few entire 3 to 5 lobed or pedatisect. Spathe base tubular short constricted above persistent. Limb ovate or lanceolate or linear deciduous, spadix exserted. Female flowers crowded, above some elongate neuter. Males above numerous, appendage long exsert. Anthers oblong sessile. Ovaries 1 celled, ovules 1-2 basal erect. Berries oblong 1-2 seeded. Seed globose or oblong.

Species 15. Tropical Africa, Asia, Australia.

Limb of spathe broadly ovate acuminate.

Stem subterranean tuberous.

Appendage short and thick, tip of spathe not coiled	1. *T. trilobatum.*
Appendage long slender, tip of spathe coiled	2. *T. Roxburghii.*
Stem epigeal, supported on the roots ..	3. *T. fultum.*

Limb linear, stem tuberous.

Very small plant. Inflorescence 3 inches long	4. *T. filiforme.*
Large plant. Inflorescence 6 inches long	5. *T. cuspidatum.*

1. T. trilobatum, Schott. Wien. Zeitschr. III. 72. Tuber ½ inch across. Leaves 3 or 4, three lobed, midlobe ovate acuminate 6 inches long, 3 inches wide, laterals shorter blunter sub-bilobed at base, inaequilateral, petiole 15 inches long sheathing for 2 inches, grey green. Peduncle 1 inch long green mottled with red. Spathe large tube broad 2 inches long, 1 inch through olivaceous, blade ovate acuminate deep red 5-7 inches long 3 inches wide. Spadix nearly

6 inches long. Appendage cylindric blunt red, base dilated and intruded beneath 3 inches long $\frac{3}{8}$ inch thick, below a nude portion nearly $\frac{1}{4}$ inch long, male portion cylindric $\frac{1}{2}$ inch long rose pink. Anthers 4 lobed, below a white nude portion $\frac{1}{2}$ inch long, neuters filiform white very numerous slender curled and matted $\frac{3}{8}$ inch long. Female portion conic $\frac{3}{8}$ inch long. Stigmas deep crimson discoid, ovaries connate. Fruit oblong 1 seeded. Seeds oblong elliptic brown dotted $\frac{3}{16}$ inch long with a white cup-shaped aril at the base. Trim. Fl. Ceyl. IV. 353. Hook. fil. Fl. Brit. Ind. VII. 509, (in part). *T. orixense,* Schott. Wien. Zeitschr. III. 72. *Arisaema orixense,* Roxb. Fl. Ind. III. 503. Wight. Ic. t. 801. (probably).

Pahang: Pekan and Pulau Jellam (Ridley). In waste ground in villages. Distrib. India and Malaya. I am very doubtful as to the synonymy of this plant.

2. T. Roxburghii, Schott. Aroid. I. 121, (excl. fig. 17). Tuber subglobose. Leaves young ovate cordate. Adult 3 lobed, side lobes lanceolate dark green very inaequilateral base auricled on the outer side $3\frac{1}{2}$ inches long $1\frac{1}{2}$ inch wide, midlobe ovate acuminate 5 inches long 3 inches wide, petiole 6 inches long. Peduncle very short 1 inch long. Spathe base dilated $1\frac{1}{2}$ inch long greenish streaked brownish red, limb 2 inches across broadly ovate acuminate dark brownish red, apex greenish, convolute. Spadix 8 inches long, appendage 6 inches long cylindric acuminate deep purple, below a short nude portion. Male inflorescence $\frac{3}{8}$ inch long. Stamens in 8 or 9 whorls, yellow, pollen pink; below a nude portion bent $\frac{1}{2}$ inch long. Neuters cylindric yellow numerous decurved. Female portion short. Pistils dilated in the middle, white spotted pink. Stigma flat orbicular. Trim. Fl. Ceyl. IV. 353. *T. triste,* Griff. Notul. III. 145. *T. javanicum,* Miq. Fl. Ind. Bat. III. 193. *Arum trilobatum,* Roxb. Fl. Ind. III. 505. Wight. Ic. t. 803.

Singapore, Botanic Gardens (Ridley 1675); Penang (Curtis); Malacca (Cantley's Coll.). Distrib. India, Siam, Malaya. There has been a great amount of confusion raised about this and the allied species. The plant referred to *T. Motleyanum,* Schott. in Fl. Brit. Ind. p. 510, are doubtless to be referred to the plant described above.

3. T. fultum, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XLI. p. 45. A small herb not tuberous. Stem short emitting strong roots which raise it above the ground. Leaves about 5 or 6 ovate or deltoid hastate 2-3 inches long 2 inches wide deeply cordate apex acute, lobes rounded, petiole $2\frac{1}{2}$ inch long. Peduncle $\frac{1}{4}$ inch long. Spathe base green dilate $\frac{1}{4}$-$\frac{1}{2}$ inch long limb 1-2 inches long $\frac{1}{2}$ inch broad subacute purple veined, tip green. Spadix about as long, appendage orange brown cylindric from a thick base tapering upwards, below a short nude portion, male portion of about 6 rows of oblong yellowish

anthers, then a longer nude portion, neuters numerous horn-shaped white upcurved. Females one whorl oblong 1 seeded.

Selangor Caves, Kuala Lumpur (Ridley 8165); Lankawi (Curtis). Endemic.

4. T. FILIFORME, Ridley, Journ. Roy. As. Soc. S. Br. Vol. XLI. p. 45. Tuber globose ⅓ inch through. Leaves 2 or 3 deltoid hastate acuminate lobes divaricate acute 2-3 inches long ¾-1½ wide, petiole slender 2-5 inches long. Peduncle ¼ inch long. Spathe 3 inches, base elliptic ¼ inch long olive green, limb linear very narrow, apex eventually revolute yellowish spotted with red. Spadix very slender 3½ inches long. Appendage ochre, 3 inches long filiform. Male portion short below a long slender nude portion, neuters filiform contort long. Female flowers few oblong.

Perak, Kuala Dipang base of limestone cliffs (Ridley 9620). Endemic, rare. Allied to *T. bulbiferum,* Dalz. of the Concan, differing in the absence of any trace of bulbils, longer appendage and neuters, and longer nude space below the male flowers.

5. T. CUSPIDATUM, Blume. Cat. Hort. Buit. 101. Rumph. 1. 133, t. 10, f. 1-3. Tuber oblong or globose 1 inch long. Stem 2 inches long white. Leaves 3 or 4 ovate hastate or triangular light green 4 inches long 1-1½ inches wide, petiole 3-9 inches long. Peduncle 1 inch long. Spathe base dilated globose ribbed bright polished green ¾ inch long, blade linear acute deflexed 4 inches long, ½ inch wide green edged red-brown. Spadix 4-6 inches long, appendage long filiform from a conic base yellow, 3-5 inches long, male flowers yellow below then scattered white decurved neuters, linear, and a series of horizontal purple tipped ones. Female portion very short, pistils ovoid, stigma discoid. Decaisne Descr. Herb. Timor. 39. Kunth. Enum. III. 26. Schott. Ic. Ar. 112. Syn. 19. Miq. Fl. Ind. Bat. III. 194. Engler Arac. 616. Hook. fil. Fl. Brit. Ind. VI. 5111. *Arum cuspidatum,* Bl. Cat. Hort. Buitenz. 101. *A. flagelliforme,* Lodd. Bot. Cab. t. 396. Rovb. Fl. Ind. III. 502. Wight. Ic. t. 791. Griff. Itin. Notes 13. No. 193. Notulae III. 144, (*flagelliferum*). *A. angulatum,* Griff. Notul. III. 143.

Malacca: Ditches near the town (Ridley 11379), (Griffith); Penang: Sepoy Lines (Curtis 1858); Pulau Tikus (3023); Singapore: abundant in some parts of the Botanic Gardens, evidently introduced. Distrib. India, Siam, Malay Archipelago.

5. AMORPHOPHALLUS, Bl.

Herbs with usually large round tubers. Leaves produced singly from the top of the tuber, often very large, petiole tall and stout often mottled or scabrid, blade 3 lobed, with pinnatisect segments.

Spathe and spadix produced after the fall of the leaf, peduncled. Spathe tube convolute limb usually broad. Spadix tube convolute limb usually broad. Spadix with a large conic or cylindric appendix. Male and female flowers crowded, neuters 0. Anthers 3-4, sessile cells oblong with apical pores. Ovaries globose or flattened. Style short or long. Stigma 2 to 4 lobed or entire. Berries elliptic or subglobose. Seeds exalbuminous.

Species about 40. Tropics of the whole world.

Style much longer than the ovary.
Appendix large cone-shaped .. .. 1. *A. malaccensis.*
Style short.
Spadix little longer than spathe.
Appendix fusiform .. .. .. 2. *A. sparsiflorus.*
Appendix cylindric .. .. .. 3. *A. minor.*
Spadix much longer.
Appendix conic.
Spathe yellow ovaries discoid .. .. 4. *A. Prainii.*
Spathe flesh colour, ovaries flask-shaped 5. *A. carnea.*
Appendix long cylindric.
Peduncle 12 inches long, leaf 5 lobed 6. *A. haematospadix.*
Peduncle 2-3 feet, leaf pinnatisect .. 7. *A. variabilis.*

1. A. MALACCENSIS, Ridley Journ. Roy. As. Soc. S. Br. Vol. XLI. p. 46. Tuber 4 inches through hemispheric top depressed. Leaves not seen. Peduncle 7 inches tall rough. Spathe tube wide trumpet-shaped, 3 inches long, limb broad rounded 6 inches long and as wide. Spadix longer, appendage fusiform acuminate 6 inches long rugose, hollow loose textured and fibrous within, male portion 1 inch long, anthers crowded oblong. Female portion 2½ inches long, flowers numerous, ovaries ovoid, style ¼ inch long.

Malacca: Panchur (Goodenough 1815). Endemic.

This differs from *A. rex,* Prain in the longer peduncle, and longer narrower appendix. I have not certainly seen the foliage, but have several times met with leaves resembling those of *A. rex* with a green scabrid petiole. A very large spike of fruit over a foot long with berries ½ inch long collected by Hervey on Bukit Payong in Malacca may be this.

2. A. SPARSIFLORUS, Hook. fil. Fl. Brit. Ind. VI. 516. Tuber orange-shaped. Leaf bulbiferous at the top of the petiole green shaded red and brown, leaflets 7, shortly petiolate, oblanceolate acuminate 6 to 8 inches long 1½ inch wide, peduncle 1-2½ inches long, sheaths longer linear. Spathe 4-5 inches long, tube 1½ inch long

pale red brown spotted purplish brown, limb ovate oblong suberect acute 2 inches across basal marquis revolute round the mouth of the infundibular tube. Spadix 3½ inch long, appendix fusiformly conic 2 inches long. Male inflorescence ½ inch long. Stamens scattered very small. Female portion as long, pistils sessile globose. Style very short. Stigma capitate.

Perak: Larut Hills (Wray 111, Kunstler). Endemic.

3. A. MINOR, Ridley Journ. Roy. As. Soc. S. Br. Vol. XLI. p. 46. Tuber 1 inch through. Leaf petiole 9 inches long slender, lamina 3 branched, each branched again, leaflets numerous thin green (red when young) lanceolate acuminate inaequilateral 3 inches long by 1 wide nerves numerous close joining an inner marginal one. Peduncle 8 inches to a foot long with loose brown sheaths at the base the largest truncate 4 inches long. Spathe 3 to 4 inches long convolute at the base, lanceolate acuminate 1-1½ inch across. Spadix 3 inches long, apendix cylindric conic 1 inch. Male portion as long as the appendix, flowers very numerous crowded. Females few, style very short.

Perak: Larut Hills (Ridley); Province Wellesley: Tasek Gelugur. Endemic.

3. A. MINOR, Ridley Journ. Roy. As. Soc. S. Br. Vol. XLI. p. inches across or more. Leaf 2 to 6 feet petiole stout green marbled with white, lamina large and spreading leaflets 4 to 8 on each branch bases decurrent lanceolate caudate 5 inches long by 2 wide nerves numerous conspicuous joining an intramarginal one. Peduncle 3 inches long stout mottled like the leaf petiole, with very large pink sheaths. Spathe tube 2-3 inches long broad, base pinkish outside, lemon yellow above the deep purple inside, limb broadly ovate blunt 8 inches across lemon yellow. Spadix barely or not longer, appendix 2 inches long and 1½ inch wide greyish white, male portion an inch long. Stamens crowded numerous white, pollen yellow. Female flowers in 3 or 4 spirals rather distant, with a cushion-like ovary, a stout style, and bilobed stigma all crimson, base of spadix nude. Drupes about ¼ inch long elliptic red, seed hard.

Singapore: Bukit Timah (Ridley); Selangor Caves at Kuala Lumpur; Pahang: Pulau Manis, Pahang River; Perak: Larut (King's Coll. 2995); Dindings: Gunong Tungul (Ridley 7245); Penang: Penara Bukit, Government Hill (Curtis), (Ridley 7246). Distrib. Sumatra.

In damp woods and thickets. "Loki" of the Malays. This chiefly differs from *A. oncophyllus,* Prain in the colour of the spathe. I once had a specimen in which the appendage was quite suppressed.

5. A. CARNEA, Ridley Journ. Roy. As. Soc. S. Br. Vol. XLI. p. 47. Tuber hemispheric 3 inches across. Leaf unknown. Peduncle 3 inches and a half long. Spathe 5 inches long loosely convolute at the base, with a broad limb pinkish with brown blotches, paler within. Spadix rather longer. Appendix conic obtuse 3 inches long, 1 inch through at the base flesh colour obscurely cancellate. Male portion 2 inches long stout greenish. Stamens densely crowded. Female, ovary shortly pedicellate broad flask-shaped, style short and thick, stigma lobed.

Lankawi Islands (Curtis). Endemic.

This plant was flowered in Penang Gardens, having been brought in with other plants from Lankawi. I have only seen a drawing of it. It appears nearest to *A. hirsutus,* Teysm.

6. A. HAEMATOSPADIX, Hook. fil. Fl. Brit. Ind. VI. 517. Tuber hemispheric. Leaf 2 feet tall, petiole 20 inches long and ¾ inch through at the base olive colour, lamina about a foot across trifid with 5 oblong lanceolate acuminate dark green leaflets 5 to 7 inches long 2 inches across narrowed at the base. Peduncle 10-12 inches tall black with orange sheaths 6 inches long at the base. Spathe 6 inches long, tube broad, lamina lanceolate acuminate about 1 inch wide below, pale pink or brownish outside white inside, base deep maroon. Spadix 5 to 7 inches long, appendage cylindric blunt 3 to 6 inches long deep purple, narrowed below. Male portion short about as long as the female, red. Female portion cylindric pistils crowded sessile broadly globose flattened, style distinct stout, stigma discoid.

Lankawi: Terutau (Curtis 2816). Endemic.

7. A. VARIABILIS, Blume Rumphia I. 146, t. 36 and 37. Root-stock cylindric, or carrot-shaped, or hemispheric. Leaf petiole 6 to 30 inches long, base ¾ inch through smooth olive green with pale spots, lamina trifid pinnatisect, lobes ovate to lanceolate acuminate dark green decurrent 5 inches long by 2 wide. Peduncle 3-4 feet long olive brown marbled, sheaths at base light brown. Spathe base campanulate 2 inches long broad, greyish, limb narrow lanceolate 5 inches long. Spadix over a foot long. Appendage cylindric tapering toward the point ½ inch through dirty white. Male portion 1½ inch long, stamens crowded light brown. Female portion shorter, pistils globose style very short stigma discoid. Kunth. Enum. III. 33. Engler. Arac. Monogr. p. 314. *A. elatus,* Hook. fil. Fl. Brit. Ind. VI. 317. *Brachyspatha variabilis,* Schott. Syn. 35. Gen. Ar. t. 29. Prodr. 127. Miq. Fl. Ind. Bat. III. 200. Gard. Chron. 1876. Fig. 129, 130.

Perak: Larut Hills (Kunstler); Lankawi: Terutau (Curtis No. 2815). Distrib. Java.

The rootstock as figured by Blume is hemispheric and depressed at the top, rather small; that of the Lankawi plant is cylindric and

small, somewhat resembling a carrot in shape at times. The latter plant however grows in clefts in the limestone rocks which probably accounts for its odd form. The rest of the plant seems quite identical with Blume's figure and with a living plant I once obtained from Java. There are several other species in the Malay Peninsula of which I only seen leaves.

6. Hapaline, Schott.

Small tuberous herbs. Leaf solitary petiolate thin cordate. Scape slender. Spathe tubular at base, limb lanceolate or linear oblong. Spadix as long slender. Male portion elongate, female adhering to the tube, distant. Male flower elongate peltate, stipitate with 4-8 anther cells beneath from the margin. Ovaries few flask-shaped, one celled one ovuled. Stigma discoid.

Species 3. Burmese, Malay Peninsula and Borneo.

H. Brownei, Hook. fil. Fl. Brit. Ind. VI. 520. Tuber small globose. Leaf petiole 3-7 inches long blade ovate thin deeply cordate lobes rounded acuminate margins crisped undulate, upper surface bullate, 3-6 inches long 2½-3 inches wide. Peduncle slender 4-5 inches long pinkish. Spathe tubular portion 1 inch long, blade lanceolate acute white 1½ inch long ½ inch wide reflexed. Spadix 3 inches long erect slender. Male flowers scattered ¼ inch across with 8 minute pendulous anthers. Female flowers few flask-shaped. Bot. Mag. t. 7325.

Kedah 100-500 feet (King's Coll.); Lankawi Islands (Curtis 2819). Endemic.

7. Colocasia, L.

Large herbs with a short stout stem and large ovate cordate petioled leaves. Spathe 1 or several, peduncled base convolute thick constricted at the mouth, limb dilate deciduous. Spadix shorter stout or slender. Appendage conic or cylindric or absent. Male portion large, flowers crowded. Female portion shorter with a number of neuter flowers between it and the male. Ovaries conic or oblong. Style and stigma globose. Ovules numerous parietal. Fruit oblong, seeds very numerous and small albuminous.

Species 6 or 7. Tropical Asia.

C. gigantea, Hook. fil. Fl. Brit. Ind. VI. 524. Stem short or stout. Leaves enormous petiole stout about 4 feet long, hoary, blade ovate cordate 6 feet long thin light green, white beneath. Spadices several in the leaf axil peduncles 6 inches long. Spathe tube broad green 2 inches long, limb boat-shaped ivory white 5 inches long fragrant. Spadix white, appendage conic blunt. Male portion 4 inches long ½ inch through. Flowers about ⅛ inch across. Neuter

portion 1½ inch long broadest at base. Flowers irregular, flat channelled at the top, lower ones papiliform. Female portion conic ¾ inch long and nearly as much through at the base. Ovaries honey-yellow, oblong. Capsule ¼ inch oblong. Seeds fusiform ovoid deeply ribbed and grooved. *C. indica*, Engler. Arac. 194, (not Kunth). *Leucocasia gigantea*, Schott. Oestr. Wochenbl. 1857, 34. Prodr. 141.

Selangor: Among limestone rocks at the Kwala Lumpur Caves (Ridley 8156); Perak (Scortechini), Ipoh (Curtis 3168). Distrib. Cochin China, Siam Java, Borneo.

C. ANTIQUORUM, L. "Keladi Telor" is largely cultivated by the Chinese to feed pigs. The rhizomes so far as I have seen here are quite small and are not used at all for food. The plant is troublesome to eradicate where it has once been planted and persists for a long time, but does not spread much. It is certainly not wild in the Peninsula, but I have seen it far up the river Tahan (No. 2388 of many collections) where it had evidently been carried by the Sakais. It is very abundant in swampy grounds in the low country, all over the Peninsula and not rarely flowers.

8. ALOCASIA, Schott.

Herbs with stout rhizomes usually erect. Leaves ovate cordate or sagittate rarely entire, long petioled. Spathes peduncled, base convolute constricted at the top, limb lanceolate or cymbiform deciduous. Spadix shorter, appendage cylindric. Male and female flowers as in *Colocasia*, but ovaries few basilar erect. Fruit drupaceous pulpy red with 1 to 3 rather large seeds.

Species about 20. Tropical Asia.

A considerable number of garden species have been made based on the form of the leaf only, a very variable and unsafe character.

Leaf entire peltate .. .. 1. *A. Beccarii.*
Leaf ovate cordate or hastate.
Sinus deep, lobes long divaricate.
Petiole mottled. Stigma sessile .. .. 2. *A. denudata.*
Petiole plain, style distinct .. .. 3. *A. Lowii.*
Sinus shallow, lobes short blunt .. .. 4. *A. ovalifolia.*

1. A. BECCARII, Engl. Bull. Soc. Tosc. di Ort. 1879, p. 300. Malesia p. 293, t. XXVI. Stem long creeping over 6 inches with long roots, sheathed above. Leaves several, petiole 6 inches long with broad sheaths at the base, lamina entire lanceolate acuminate or elliptic, 9 inches long by 4 inches wide light green basal lobes connate throughout their length except the tips, nerves 3-4 pairs. Peduncle 3-8 inches long white. Spathe white 2 inches long, tube cylindric, one inch long and as wide limb as long as the tube cymbiform white.

Spadix 1¾ inch long, appendage cylindric obtuse, slender ¾ inch long, male portion ½ inch long. Female flowers in three rows. Drupe red ¼ inch long seeds globose. Hook. fil. Fl. Brit. Ind. VI. 527. *A. perakense,* Hemsl. Journ. Bot. 1887, 205.

Selangor: Bukit Hitam (Kelsall); Perak: Larut Hills (Wray, Ridley, etc.). Distrib. Borneo. On rocks in forests, alt. 2-3000 feet.

2. A. DENUDATA, Engl. Arac. 507. Stem about 2 inches long stout. Leaves 1 to three, petiole 15 to 24 inches long ½ inch through marbled transversely with grey, lamina hastate (entire in seedlings) lobes divaricate blunt or subacute over a foot long dark green with paler veins, 9 inches wide. Spadices 1 to several, peduncle 6-12 inches long marbled rather slender enclosed in thin marbled grey sheaths. Spathe 4-6 inches long, tube short 1-1½ inch long swollen, lamina oblong cuspidate 5 inches long 1 inch wide at length reflexed pale green or white. Spadix 3½-4 inches long, appendage cylindric slender 1½ inch long pale ochre or orange. Male portion ½ inch long white. Flowers oblong flat-topped crenulate stamens 6; neuter portion ¼ inch, flowers hexagonal white or orange. Female portion cone-shaped ½ inch long, ovaries short subglobose. Stigma 4-horned large fleshy sessile, base of spadix nude. Fruit globose red 1 to 3 seeded. Seeds black subglobose flattened at both ends ⅛ inch long. Hook. fil. Fl. Brit. Ind. VI. 525. *A. singaporensis,* Linden Garten. Flora XIV. 252. *A. Curtisii,* Hemsley Kew Bulletin 1894, 347.

Singapore very common; Johor: Bukit Murdom (Kelsall), Pulau Dayong (Feilding); Pahang: Pekan, Kota Glanggi (Ridley); Perak: Dindings at Lumut; Malacca (Maingay), Pulau Besar (Griffith), Ayer Bumban (Ridley); Lankawi Islands (Curtis). Distrib. Lingga, Borneo.

This species was based on a leaf collected in Singapore by Gaudichaud which was doubtless this very common plant, the only species occuring in the low country. *A. longiloba,* Miquel Fl. Ind. Bat. III. 207, an insufficiently described plant from Zollinger's Collection is probably this, but Hallier, Bull. Herb. Boissier VI. 1898, 609, considers that to be *A. Lowii* var. *Veitchii.* There is no great difficulty in distinguishing these two plants if the specimen are good enough. It is only a question of what Miquel intended by his description. Hemsley's *A. Curtisii,* from Lankawi is quite indistinguishable from the common form. The "Keladi Rimau" or "Keladi Ular," so called from its mottled stem recalling a tiger skin or a snake skin is common over the whole Peninsula in the low country and does not really vary much even in foliage unless very young and very old leaves are compared. The early leaves of seedlings are quite entire and peltate just like those of *A. Beccarii,* Engl. A very handsome form with deep purple underside of the leaf and otherwise much resembling *A. Lowii* was brought by Mr. Machado from Bukit Telega, Pahang.

I have not seen the flowers but as the petiole is clouded, it is doubtless *A. denudata.*

3. A. Lowii, Hook. fil. Bot. Mag. t. 5376. Stem thick short covered with fibrous sheaths. Leaves 1 or 2, petiole 1½ to 2 feet tall greyish green with small blackish markings, lamina ovate cordate to hastate cuspidate 1½ feet long 7-12 inches across dark green veins elevated white margin white, back purple. Peduncle 8-14 inches long pale green. Spathe 5 inches, tubular portion 1 inch long and through, limb arched 4 inches long by ½-1¼ wide, boat-shaped pale green. Spadix 3½ inches long slender, base nude. Appendage cylindric acute curved, 1½-3 inches long ¼ inch thick, cream colour. Male portion ⅓ of its length white, flowers rhomboid crenulate. Female portion 1 inch long. Pistils in about 6 whorls. Ovaries green subglobose. Style thick rounded with two or four mammillary points white. Flore de Serres XXI. t. 2204. Engler. Arac. 508. *Caladium Lowii,* Lem. Ill. Hort. t. 360.

Selangor: Kwala Lumpur Caves (Ridley); Perak: Kwala Dipang (Ridley, Curtis). Among limestone rocks. Distrib. Borneo, Java.

This plant often approaches *A. denudata,* Engl. very closely in appearance but the veins of the leaf are more conspicuously white, the petiole and peduncle pale green never marbled, the spathe more boat-shaped, sterile flowers between the male and female fewer and white, and the style broad and thick.

5. A. ovalifolia, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XLI. p. 47. Stem about a foot tall. Leaves ovate cordate acute lobes dark green 1 to 2 feet long 5 to 12 inches wide, with 20 pairs of nerves petiole stout over a foot long. Peduncle 6 inches long or less. Spathe 3 to 6 inches long, tubular portion 1½ inch long, limb 3 inches long ½ inch wide oblong obtuse. Spadix slender appendage cylindric, ¾-2 inches long. Male portion 1 inch long, flowers oblong crowded below this a nude portion. Female portion 1 inch long.

Johor: base of Gunong Panti; Selangor: Pahang Track 15th mile (Ridley 8487), Ginting Peras, Bukit Kutu (Ridley); Perak: Sungei Larut (Wray 2457), Larut Hills (Ridley); Penang: Moniot's Road (Curtis). Endemic.

A. indica, Schott. and A. macrorrhiiza, Schott. are cultivated for food and may often be seen in and round villages.

A. cucullata, Schott. A native of India occasionally occurs also as an escape from cultivation.

9. Aglaonema, Schott.

Herbs with an erect or creeping stem. Leaves ovate or oblong petioled entire. Spathes peduncled boat-shaped gaping, base shortly convolute deciduous. Spadix shorter than the spathe or as long,

base nude, male portion cylindric or clubbed. Stamens 2 to 4. Female flowers few 1 or 2 celled. Stigma flat discoid ovules solitary anatropous. Drupes fleshy 1 seeded. Seeds exalbuminous.

Species about 20. Asiatic.

Stems creeping.	
Leaves linear oblong base narrow ..	1. *A. Griffithii.*
Leaves ovate base broad	2. *A. costatum.*
Stem erect. Spadix cylindric.	
Leaves linear oblong coriaceous large ..	3. *A. oblongifolium.*
Leaves thin oblong	4. *A. Schottianum.*
Leaves narrow lanceolate linear	5. *A. angustifolium.*
Stem erect. Spadix clubbed	6. *A. minus.*

1. A. GRIFFITHII, Schott. Syn. 123. Rhizome creeping stout. Leaves erect fleshy linear oblong obtuse 12-16 inches long 3-4 inches wide dull dark green, petiole 26 inches or more long. Peduncles from the rhizome stout about 6 inches to a foot. Spathe boat-shaped cuspidate 3 inches long 1 inch across edges overlapping at the base light green. Spadix about as long, male portion cylindric stout, 2½ inches long. Ovaries 5, yellow base broad rounded, narrowed upwards. Stigma discoid centre depressed. Fruit ovoid 1½ inch long 1 inch wide green, pericarp thick fleshy, seed solitary half inch through. Hook. fil. Fl. Brit. Ind. VI. 528. *A. palustre,* Teysm. and Binn. Naturl. Tijdschr. XXV. 305. Kurz. Journ. As. Soc. Beng. XIV. Pt. II. 153. *Aglaodorum Griffithii,* Schott. Gen. 758. Prod. 306. Engl. Arac. 443.

Malacca (Griffith). In Nipa swamps in the town suburbs (Ridley). Distrib. Sumatra, Borneo. Probably common in other tidal rivers, but the leaves so closely resemble those of *Cryptocoryne ciliata* at a little distance that it is difficult to distinguish them.

2. A. COSTATUM, N. E. Br. Gard. Chron. 1892, I. 426. Rhizome creeping about 5 to 6 inches long. Leaves often crowded, petioles 3 or more inches long rather slender, sheathing blade coriaceous lanceolate or ovate lanceolate acute with a broad rounded base 6 to 12 inches long, 3 inches wide, deep blackish green blotched with white, rather coriaceous. Peduncle 3 inches long with sheathing leaves at the base. Spathe 1 inch long oblong green, with a small mucro. Spadix 1¼ inch long base nude nearly ¼ inch. Female flowers in one whorl about 10. Ovary narowed upwards, stigma discoid much wider. Male portion thick blunt 1 inch long ⅓ inch through. Hook. fil. Fl. Brit. Ind. VI. 531.

Lankawi in woods near limestone rocks, Kwah (Curtis). Distrib. Siam to Laos.

var. *immaculatum*. Leaves more scattered, petioles longer as much as nine inches long blade deep blackish green with the midrib only white. Grows with the other form and is commoner.

3. A. OBLONGIFOLIUM, Schott. Wien. Zeitschr III. 1829, 892. Stem stout erect about 2 feet tall. Leaves linear oblong narrowed at base coriaceous dark green usually with white splashes, nerves very close, 12 inches long 3½ inches wide or larger, petiole 4 to 6 inches long, sheathing for ⅔ of its length. Spadices numerous, peduncles rather stout erect green 4 to 5 inches long. Spathe oblong mucronate, light polished green about 2 inches long. Spadix longer, base nude, male portion 1½ inch long cylindric blunt, flowers white very irregular. Female portion ½ inch long. Ovaries about 3 whorls, green, stigmas discoid yellow ⅛ inch across. Drupes oblong ¾ inch long red, seed elliptic oblong green ⅝ inch long soft, channelled on one side. Kunth. Enum. III. 55. Hook. fil. Fl. Brit. Ind. VI. 528. *A. integrifolium,* Schott. Melet. 20. *A. nitidum,* Kunth. Enum. III. 56. Schott. Syn. 122. Prodr. 302. Engl. Arac. 438. *Calla. oblongifolia,* Roxb. Fl. Ind. III. 516. Wight. Ic. t. 806. *C. nitida,* Jack. Mal. I. No. 1. 24. *Arum. integrifolium,* Link. Enum. Hort. Berol. II. 394.

Singapore (Wallich 8965 B), Chan Chu Kang, Bukit Mandai (Ridley); Selangor: Kuala Lumpur Caves (Ridley); Sungei Ujong: Bukit Sulu (Herb. H. B. Singap.); Pahang: Kuala Tenok, Tahan River (Ridley); Perak: Chanderiang (King's Coll. 5652, Hermitage (Curtis 1326); Penang Waterfall (Curtis 1881).

var. *Curtisii,* N. E. Br. Gard. Chron. 1897. Vol. 21. p. 70. Leaves striped with white at an angle with the midrib.

Penang: Penara Bukit (Curtis). Common in woods in the low country. Native name "Daun Lidah Gajah." Distrib. Lingga, Borneo.

4. A. SCHOTTIANUM, Miq. Fl. Ind. Bat. III. 316. Stem stout erect 1-12 feet tall. Leaves scattered, petiole 4 inches long sheathing for ¾ length, blade oblong cuspidate inaequilateral, base broad unequal nerves 7 to 10 pairs conspicuous 9 to 10 inches long 2½ inches wide. Peduncles 1¼ inch long. Spathe oblong cuspidate 1 inch long broad. Spadix shortly projecting white. Schott. Prodr. 303. Engler Arac. 440. Hook. fil. Fl. Brit. Ind. VI. 530. *A. longe-cuspidatum,* Schott. l.c. 304. *A. malaccense,* Schott. Bonplandia 30. Prodr. 302.

Singapore: Pulau Ubin, Chan Chu Kang (Ridley); Malacca: Chabau (Griffith); Perak: Larut Hills (King's Coll. 6023), (Wray 2828); Penang: Pulau Betong, Waterfall (Curtis 1721, 1881); Lankawi (Curtis 2679, 2636). Distrib. Burmah, Java, Borneo.

5. A. ANGUSTIFOLIUM, N. E. Br. Kew Bulletin 1895, 19. Stem 2 feet tall, 1 inch through. Leaves numerous erect, petiole 3 inches

long sheathing half way or more, lamina lanceolate linear acuminate falcate subcoriaceous, nerves ascending 12 pairs, 1 foot long 1½ inch wide deep blackish green. Peduncles 3 inches long. Spathe oblong mucronate 1½ inch long, quite convolute round the spadix, pale green. Spadix longer 2 inches. Male portion cylindric blunt 1½ inch wide, neuters scattered few. Female portion short. Ovaries green globose narrowed at the top stigma yellow flat discoid, nude portion at base rather long. Fruit elliptic oblong red. Seed ⅜ inch long oblong.

Singapore common: Chan Chu Kang (Ridley 1647); Johor: Gunong Janeng (Kelsall); Malacca and Sungei Ujong.

var. *undulatum*. Leaves narrower margins crenulate undulate, petiole sheathed for ⅔ of its length.

Dindings at Lumut (Ridley 9508, 10144).

The typical form very common in woods in Singapore, and elsewhere. It seems to pass into *A. Schottianum*, as intermediate form occur. The leaves of young plants are almost black. The type of the species is really the var. *undulatum*, an odd form growing in the wood behind the residence at Lumut. The common and typical form does not seem ever to have been described. Native name "Sagut," "Sumpuh Bulau," "Sumpuh Kring," "Penggehe." A decoction of the roots used for fever and dropsy.

6. A. MINUS, Hook. fil. Fl. Brit. Ind. VI. 530. Stem 6 to 9 inches tall slender erect base bare. Leaves oblong, oblong ovate or elliptic acuminate, 4 inches long by 1 inch wide, dark green, often marbled with grey nerves 6 to 7 pairs. Peduncle an inch long dark green slender. Spathe short and broad oblong swollen mucronate gaping ½ inch long and as wide greenish white. Spadix much longer, base ¼ inch nude white bent forward, male portion oblong clubbed obtuse ½ inch long, flowers white roughly 4 angled at the top, between them and the females a few neuters. Female portion ⅛ inch long, flowers about 10, ovaries dilate at base narrowing upwards pale green. Stigma discoid not much longer than the top of the ovary. Drupe ¼ inch long red, seed oblong.

Singapore (Wallich 8960 A), Bukit Timah (Ridley 5107), Jalan Bray (6002), Chan Chu Kang (8081), Bukit Mandai (4064), Chua Chu Kang (8082); Johor: Bukit Soga, Batu Pahat (Ridley 11224); Malacca: Merlimau (Derry 572); Selangor: Kuala Lumpur, Sungei Ujong, Bukit Sulu (Cantly's Coll.); Pahang: Pekan (Ridley).

var. b. *Scortechinii*. *A. Scortechinii*, Hook. fil. l.c. Leaves rounded ovate to elliptic.

Perak (Scortechini), Sungei Udang, Bukit Sulu (Cantley's Coll.); Malacca: Mount Ophir (Derry 613); Muar: Sungei Pauh (Fox); Selangor: Ginting Bidai (Ridley 7667) and Dusun Tua.

var. c. *nanum*. *A. nanum*, Hook. fil. l.c.c. Leaves longer oblong lanceolate more fleshy and nerves more prominent.

Perak: Ulu Bubong (King's Coll. 10421).

This is a common little plant in the damp spots in forests, and very variable in form and colouring of leaf, but the forms all seem to pass into each other, and I can see no difference in the spadices. *A. pictum*, Kunth. Enum. III. 55. *Calla picta*, Roxb. Fl. Ind. III. 516. Wight. Ic. III. 804. *Aglaonema gracile*, Schott. Ann. Mus. Lugd. Bat. I. 279 from Sumatra is barely distinct and probably *A. pumilum*, Hook. fil. l.c.c. based on a Burmese plant (Wallich 8960 B) should be reduced to this as Engler has done. It is known to the Malays as "Selimpat Ayer" and the leaves are eaten as vegetables.

10. Homalomena, Schott.

Stems eventually stout, or very short. Leaves herbaceous oblong, lanceolate, or ovate cordate. Spathe base or whole convolute persistent in fruit. Spadix included. Male and female portion close together, no appendage, base often nude, neuters often between the male and female portion. Stamens in hexagonal groups. Anther cells oblong, opening by pores or slits, connective broad. Females. Ovaries ovoid or globose, more or less 2 to 4 celled. Ovules in two rows. Stigmas sessile usually hemispheric, white clubbed staminodes subtending each ovary, rarely absent. Berries small few or many seeded. Seeds small.

Species about 30. Tropical Asia and America.

Spathe contracted above the female inflorescence.	
Leaves ovate sagittate	1. *H. sagittaefolia.*
Leaves oblong hastate	2. *H. paludosa.*
Leaves oblong narrowed to base ..	3. *H. rostrata.*
Spathe not contracted in the middle.	
Leaves large cordate or hastate.	
Leaves ovate, sinus deep	4. *H. coerulescens.*
Leaves deltoid sinus shallow	5. *H. deltoidea.*
§ Chamoecladon. Small plants, leaves, rarely cordate, and never hastate.	
Leaves ovate subcordate at the base minutely pustular	6. *H. humilis.*
Leaves ovate rounded, not pustular ..	7. *H. pumila.*
Leaves elliptic rounded, smooth, larger	8. *H. propinqua.*
Leaves ovate lanceolate shining rounded or acute at base	9. *H. Griffithii.*

Leaves lanceolate base rounded silvery	10. *H. argentea.*
Leaves narrowed to the base lanceolate or lanceolate. Male portion of spadix twice as long as female.	
Leaves falcate. Spathes oblong ..	11. *H. falcata.*
Leaves elliptic. Spathes turgid ..	12. *H. nutans.*
Leaves lanceolate. Spathes oblong ..	13. *H. elliptica.*
Leaves deltoid ovoid base broad	14. *H. trapezifolia.*
Leaves lanceolate. Spathes oblong small	
Female flowers 10	15. *H. Curtisii.*
Female flowers in 4 rows ..	16. *H. angustifolia.*
Female portion nearly or quite as long as male.	
Leaves lanceolate nerves 8-10 pairs distinct	17. *H. lancifolia.*
Leaves lanceolate falcate, nerves 3-4 pairs indistinct	18. *H. multinervia.*
Leaves fleshy elliptic peduncles short thick	19. *H. crassa.*
Leaves elliptic or lanceolate, peduncles 4 inches	20. *H. Scortechinii.*
Male spadix with intermixed abortive female flowers	21. *H. mixta.*

1. H. SAGITTAEFOLIA, Jungh. Schott. Prodr. 311. Stem 1 or 2 feet long stout 2 inches through. Leaves ovate sagittate acuminate, basal lobes usually spreading 9 inches long 12 inches wide, nerves 12 to 16 pairs, deep green, petiole sheathing $\frac{1}{3}$ of its length. Spathes numerous peduncles 6 inches long base $1\frac{1}{4}$-2 inches dilated, above constricted upper part boat-shaped $1\frac{1}{2}$-2 inches long pure white or greenish white, sometimes tinted pink at the apex. Spadix 4 inches long base nude $\frac{1}{4}$ inch long. Male portion $2\frac{3}{4}$ inch long rather slender white. Flowers lobed, upper ones sterile. Female portion over an inch long flowers closely packed globose. Stigma round grooved pale ochre, rudimentary flowers 1 to each ovary clubbed with a slender stock. Miq. Fl. Ind. Bat. III. 212. Engler. Arac. 334. Hook. fil. Fl. Brit. Ind. VI. 531. *H. propinqua,* Schott. Ann. Mus. Lugd. Bat. I. 280. Engler. l.c.c.

Singapore: Bukit Timah (Ridley); Selangor: Pahang Track Ginting Bidai (Ridley 7774); Sungei Ujong: Bukit Tumiang (Herb. H. B. Singap.); Perak (Scortechini 611), (Wray 1749), Larut Hills (King's Coll. 6122, 3871); Penang (Herb. Delessert). Distrib. Labuan, Borneo. Native name "Kulamaiang." Not rare in damp woods, a somewhat aromatic plant.

2. H. PALUDOSA, Hook. fil. Fl. Brit. Ind. VI. 531. Stem stout 3 inches through. Leaves oblong sagittate much longer than broad with a long point, lobes blunt, sinus not very deep, nerves 12 pairs, 12 inches long 3 to 6 inches wide deep shining green petiole 15 to 8 inches long, sheathing for half its length. Spathes several, peduncles 6 inches long, pale green contracted above the female portion 5 inches long, 1 inch through. Spadix base nude, male portion 3½ inch long white flowers oblong hexagonal neuters irregular. Female portion 1¼ inch long ovaries short subglobose, stigma large hemispheric with a Y shaped groove in the tip. Staminodes slender capitate white.

Singapore: Bukit Timah (Ridley 6318, 6538), Changi (4607); Johor: Tanjong Kupang (6310); Perak: Larut (King's Coll. 3082). Native name "Kelamoyang." In damp spots in woods.

3. H. ROSTRATA, Griff. Notulae. III. 154. Stems 2 or 3 inches tall stout. Leaves linear oblong acuminate, acute base narrowed into the petiole, 15 to 24 inches long 4½ to 5 inches wide, nerves about 9 pairs, petiole about a foot long sheathing ¼ of its length. Spathe 6 inches long constricted at the middle green edged white. Spadix base nude ½ inch long, male portion 3 inches long flowers irregular rhomboid. Female portion 1 inch long, ovaries 2 celled. Stigmas discoid grooved. Staminodes capitate. Schott. Syn. 119. Prodr. 312. Hook. fil. Fl. Brit. Ind. VI. 532. *Chamaecladon sanguinolentum*, Griff. l.c. 147. Schott. Prodr. 316.

Malacca: Alor Gajah (Griffith), Bukit Bruang (Ridley 3529), Brisu (Holmberg 743); Pahang: Kuala Mahang, Pahang River (Ridley); Selangor: Batang Berjuntai (Ridley 7662); Kuala Lumpur. Endemic.

4. H. COERULESCENS, Jungh. Schott. Prodr. 310. Stem stout 6 inches tall. Leaves ovate cordate green, lobes rounded apex acuminate 8 inches long, 7 inches wide petiole 12 inches long ¼ inch through sheathing a quarter of its length, green slightly glaucous. Spathes few peduncle stout 2½ inches long spathe oblong broad 3 inches long more than 1 through cuspidate pale green inside darker on the back or red. Spadix a little longer stout base shortly nude. Male portion cylindric blunt white 1¾ inch long, nearly ½ inch through. Flowers rosette-shaped lobed, with 4 grooves radiating from the centre a few irregular neuters below. Female portion 1 inch long, ovaries hemispheric. Stigma obscurely 3 lobed, staminodes clubbed with slender pedicels. Fruiting spike 1¾ inch long, ¾ inch through, grey. Fruits over ⅛ inch across. Seeds about 6, oblong ribbed light brown enclosed in purple. Miq. Fl. Ind. Bat. III. 212. Engler. Arac. 339. Icones. No. 67. Hook. fil. Fl. Brit. Ind. VI. 533. *H. minus* and *H. majus* Griff. Notul. III. 152, 153. Schott. Syn. 119, Prodr. 312. Engler. l.c. 343. *H. Wallichii*, Schott. Bonplandia 1859, 30. Prodr.

311. Engler. l.c. 335. *H. pontederiaefolia,* Griff. Hook. fil. Fl. Brit. Ind. VI. 533.

Singapore: Seletar (Ridley 6240), Bukit Mandai (6537); Malacca: Pulau Besar (Griffith), Ayer Panas (Griffith 5964 form *pontederiaefolia*); Selangor: Kampong Kerling, Dusun Tua, Pahang Track (Ridley 8489); Perak: Gunong Tungul, Dindings (Ridley 7251); Pahang: Sungei Tahan; Penang Hill (Wallich 895), (Curtis 1857). Common on banks and in woods. The form of the leaves is very variable, and this seems to have given rise to a number of synonyms. In the form *pontederiaefolia* the leaves are deltoid and usually less cordate, and sometimes even quite entire with a very broad base. In a drawing of a Perak specimen collected by Scortechini the base of the spathe is figured as swollen, which occasionally occurs. Distribution Malay Islands.

5. H. DELTOIDEA, Hook. fil. Fl. Brit. Ind. VI. 536. Stem short erect. Leaves ovate cordate acuminate, with a shallow sinus or deltoid ovate, lobes rounded, 6 inches long 5 inches wide, petiole slender 1 foot long sheathing for 2½ inches. Peduncles 3 inches long slender. Spathe 1 inch long oblong cuspidate not constricted. Spadix shorter hardly stipitate. Male portion clubbed broad blunt ½ inch long, flowers rounded white. Female portion nearly as long.

Johor: Gunong Pulai (Herb. H. B. Singap.); Perak (Scortechini). Endemic, local and scarce.

6. H. HUMILIS, Hook. fil. Fl. Brit. Ind. VI. 533. Stem short erect about an inch long. Leaves ovate cordate velvety looking over pustular beneath, dark green or red, nerves about 20 pairs, margin irregularly notched 3-4 inches long, 2 to 3 inches wide petiole 6 grooved dark green or red sheathing portion 1 inch long. Spathes numerous, peduncles ¾ inch long cylindric beaked ½ inch long red or green. Spadix ¾ inch long white acuminate. Male portion as long as female, or twice as long. Female flowers globose in 5 spirels shortly styled stigma discoid. Staminodes very short clubbed. Base of spadix not nude. *Chamaecladon humile,* Miq. Fl. Ind. Bat. III. 213. Engler. Arac. 345. *Calla. humilis,* Jack Mal. Misc. I. No. 1. 22.

Selangor: Bukit Kutu (Ridley 7665), Pahang Track, Petaling; Perak: Larut Hills (Ridley 2952), Gunong Keledang, Gunong Batu Putih (Wray 1034), Dindings: Lumut (Ridley 10327); Penang (Wallich 8959), Government Hill (Ridley 7033).

var. *velutina. H. velutina,* Hook. fil. l.c. 534. A large form deep red, coloured, spathes and leaves beneath bright red, petioles short, common in hill woods. Perak (Scortechini), Sungei Rajah (King's Coll.), Bujong Malacca (Ridley). Usually occurs in the hill woods about 1000 feet altitude and upwards but sometimes at a lower elevation on banks. Rather variable.

7. H. PUMILA, Hook. fil. Fl. Brit. Ind. VI. p. 535. A small plant with short erect stems. Leaves ovate or elliptic ovoid acute or blunt, bright green, silvery or dark red nerves 3-4 pairs, 1½-3 inches long 1-1½ wide petiole 1-3 inches long rather thick grooved green or red, sheathing for about ¼ its length. Peduncles ½ to ⅝ inch long. Spathes oblong short and thick base broad apex blunt cuspidate or not, green or red ½ inch long nearly ¼ inch through. Spadix not stipitate cylindric fairly thick hardly ½ inch long. Male portion 3 times as long as the female white. Female of 3 or 4 whorls with about 4 flowers in a whorl, ovaries conic. Stigma small, no staminodes. *Chamaecladon lanceolatum*, Miq. Fl. Ind. III. 212. t. 40. Bot. Zeit. 1856, p. 564. Schott. Prodr. 313. Gen. Ar. t. 60. *Ch. pygmaeum*, Engl. Arac. 345. *Aglaonema pygmaeum*, Hassk. Cat. Hort. Bogor. 1844, p. 57.

Singapore very common, Bukit Timah, etc. (Ridley), (Maingay No. 2681); Johor: Batu Pahat (Ridley); Malacca (Hervey).

var. *purpurascens*. *H. purpurascens*, Schott. Bonplandia 1858, p. 369. Leaves deep olive green above, red beneath, spathes red.

Singapore: Bukit Timah, etc. Distrib. Java, Borneo. In woods very common. The type specimen (Maingay's) in herb. Kew is very bad but I do not doubt that is this common little plant.

8. H. PROPINQUA, Ridl. Journ. Bot. 1902, 35. Stems stout erect 1 inch or more long. Leaves elliptic oblique acute base rounded 6 inches long, 2½ wide, thin textured nerves 7 pairs petiole 3-4 inches long. Peduncles ½ inch long. spathes ¾ inch long narrow cuspidate. Spadix slender, base not nude, male portion 3 times as long as the female pistils very few.

Johor: Gunong Panti (Ridley 3722). Allied to *H. pumila*, Hook. fil. but very much larger. Endemic.

9. H. GRIFFITHII, Hook. fil. Fl. Brit. Ind. VI. 534. Stem short or 4 or 5 inches long ¼ inch thick. Leaves ovate to ovate lanceolate usually more or less inaequilateral broad or narrowed at the base, apex acuminate polished light green 5 to 7 inches long 3 to 4 inches wide, nerves 4 pairs, ascending, petiole 6 to 7 inches long or less sheathing for half its length. Spathes several green cylindric curved rather thick 1 to 1¼ inch long, cusp ½ inch long, peduncles 1½ inch long. Spadix 1 inch long base nude except for a few abortive flowers. Male portion twice as long as the female white. Female flowers numerous ovoid with a small discoid stigma. Stamens numerous white clubbed. *H. obliquata*, Hook. fil. l.c.c. *H. Kingii*, Hook. fil. l.c. p. 535. *H. orata*, Hook. fil. p. 536. *Chamaecladon oratum*, Schott. Bonplandia 1859 30. Prodr. 315. Engler. Arac. 348. *Ch. obliquatum*, Schott. Bonplandia 1858, 369. Prodr. 315. Engl.

Arac. 347. *Ch. Griffithii,* Schott. Bonpland. VI. 1858. p. 369. Prodr. Ar. 315. Engler. Arac. 340. Ic. Ar. 113.

Singapore (Wallich 8694), Bukit Timah, etc. (Ridley); Johor: Batu Pahat (Ridley 10223); Malacca: Merlimau (Cantley's Coll.), Ayer Keroh, Ayer Panas (Griffith), Jasin (Goodenough 1661); Sungei Ujong: Bukit Tumiang (Herb. H. B. Sing.); Pahang: Tahan River (Ridley); Penang (Phillips, Wallich 8963). Distrib. Borneo.

Very common in woods in the low country. The leaves are very variable even on the same plant. *H. ovata,* Hook. fil. was based on a large leaved form with obliquely ovate leaves. In the form *H. obliquatum,* the base of the leaf is very oblique. The base of the spadix is usually bare of flowers but this varies a good deal. Native names "Kulumayiang Padi," "Kumayang," "Kumayang Jantan," "Asam Tikus." Leaves used in curries and native medicine.

10. H. ARGENTEA, Ridl. Journ. Bot. XL. 1902, 35. Stem about an inch long. Leaves obliquely lanceolate inaequilateral, base rounded apex acute silvery, nerves rather numerous 3 inches long 1¼ inch wide, petiole 2 inches long red. Peduncle short to ½ inch in fruit red. Spathes lanceolate not cusped, striate red, ½ inch long. Spadix shorter, base not nude. Male portion cylindric white 3 times as long as the female. Female flowers very few about 3 rows, ovaries thin textured broad dotted with pink. Stigma small subtriangular. Staminodes large clubbed, sometimes absent.

Malacca (R. Derry). Rare. Endemic.

11. H. FALCATA, Ridl. l.c.c. Rhizome stout with thick woolly roots. Leaves numerous crowded oblique lanceolate falcate acuminate rather thin textured nerves about 6 pairs, base cuneate 5 inches long 1¼ wide petiole 3 to 7 inches long sheathing for a third of their length red purple. Spadices several, peduncles 1-2 inches long moderately stout. Spathes oblong with a distinct cusp 1½ inch long. Spadix base shortly nude, male portion cylindric twice as long as the female.

Kedah: on rocks by a stream at Yan (Ridley). Rare. Endemic.

12. H. NUTANS, Hook. fil. Fl. Brit. Ind. VI. 535. Rhizome elongate creeping. Leaves seriate coriaceous, elliptic acuminate at both ends tip mucronate 4½-5 inches long 2-2¼ inch wide, nerves very obscure, petiole rather stout 3 to 5 inches long decurved at the tip. Spathes turgid oblong or broadly ovate with a recurved cusp. Spadix much shorter about ½ as long, base not nude female portion half as long as the male. Ovaries ovoid, stigma pulvinate, staminodes none. Male portion conic ovoid obtuse, twice as long as the female.

Perak: Larut Hills 100 to 1000 feet (King's Coll. 2571). Endemic

13. H. ELLIPTICA, Hook. fil. Fl. Brit. Ind. VI. 536. Rhizome creeping covered with the red leaf bases. Leaves lanceolate to ovate lanceolate 3 inches long by 1½ inch wide subfalcate bases inaequilateral, subcoriaceous, petiole rather slender 3 to 6 inches long sheathing for ⅛ to ⅙ of its length. Peduncles 3 inches long. Spathe oblong beaked rather thick ½ inch long. Spadix base shortly nude, male portion slender acuminate. Female not half as long, stigmas fleshy large. Staminodes present.

Perak: (Scortechini No. 256). Endemic.

14. H. TRAPEZIFOLIA, Hook. fil. l.c.c. Rhizome stout creeping with woolly roots. Leaves deltoid ovate with a broad base or ovate with a cuneate base apex long acuminate, stiff in texture bright green 4 to 6 inches long 1¼ to 3 inches wide at the base in the deltoid form, somewhat oblique nerves oblong 7 pairs, petiole 4 to 8 inches long sheathing for ⅛ to ¼ of its length. Peduncles 2 inches long. Spathe broad curved cuspidate an inch long. Spadix base nude, male portion conic acute much longer than the female. Ovaries broad flask-shaped stigma discoid. No staminodes.

Perak: Larut Hills (Scortechini, Wray 1976). Endemic.

15. H. CURTISII, Ridley Journ. Bot. XL. 1902. p. 34. Stem erect short leaves lanceolate oblique acuminate weak and nodding, deep green to dark red above, red beneath, nerves ascending 4 to 5 pairs, 4 to 5 inches long 1 to 1½ inch wide petiole slender red 3 to 4 inches long. Peduncle ½ inch long red, spathe oblong cuspidate ¾ inch long. Spadix stipitate, male yellow ½ inch long flowers rounded 3 to 4 lobed. Females few about 10, larger than those of *H. angustifolium*. Staminodes clubbed shorter than ovaries.

Perak: Bujong Malacca (Curtis). Endemic.

16. H. ANGUSTIFOLIA, Hook. fil. Fl. Brit. Ind. VI. 533. Rhizome creeping. Leaves inaequilateral smooth dark green, paler beneath, base cuneate narrowing to the petiole, 4-7 inches long ¾ to 1½ inch wide, nerves ascending impressed above elevated beneath 4 pairs, petiole 3 to 9 inches long sheathing for ⅓ of its length. Spathes several on slender pedicels 1½ inch long oblong cuspidate green, cusp ⅛ inch. Spadix cylindric curved subacute white ½ inch long or less. Male portion 3 times as long as the female, flowers rounded 4 lobed. Female portion short about 4 rows of ovaries, ovoid and subglobose, stigmas rounded. Staminodes shorter obcuneate. *Chamaecladon angustifolium*, Scott. Bonplandia 1858, 369. Engler. Arac. 344. Ic. Ined. No. 103. *Calla angustifolia*, Jack. Mal. Misc. 1 No. 124.

Johor: Gunong Panti (Ridley); Pahang: Tahan River (Ridley); Selangor: Pahang Track (Ridley 8188); Perak: Larut Hills, Bujong Malacca (Ridley 9793), Dindings; Penang (Porter Wall. Cat. 8959);

Richmond Pool; Kedah: Gunong Jerai (Ridley 5123). Distrib. Java. Common in mountain streams, growing in cracks in the rocks often covered with water.

var. *ophirensis.* Leaf sheaths red, leaves ovate to lanceolate 3 inches long by 1 wide, base often broad, petioles slender 4 inches long nerves about 4 pairs or more.

Mount Ophir streams on Padang Batu: Kedah, Gunong Jerai (Ridley) at 4000 feet elevation. Extreme forms very dissimilar from type, but passing into it.

17. H. LANCIFOLIA, Hook. fil. Fl. Brit. Ind. VI. 533. Stem stout creeping with numerous leaves, lanceolate acuminate, at both ends, apex mucronulate oblique 6-8 inches long 1½-2 wide dark green above paler beneath, petioles 4-5 inches long with broad leaves, nerves about 8 pairs ascending. Spadices numerous peduncles very slender 1½-2 inches long. Spathe elliptic beaked ½ to 1 inch long. Spadix slender, female portion nearly as long as the male.

Perak (Scortechini 2576), Gunong Batu Putih (Wray 385); Selangor: Pahang Track (Ridley 8462); Pahang: Tahan River (Ridley). Banks at an altitude of from 3 to 6700 feet. Endemic.

18. H. MULTINERVIA, Ridl. Journ. Bot. 1902, p. 36. Rhizome very stout creeping, roots long and thick. Leaves numerous lanceolate acuminate acute at both ends falcate 6 inches long 1½ inch wide, nerves faint and very close and numerous, primary nerves 3 to 4 pairs not very distinct, petiole 6 inches long, base broadly sheathing red 1 inch long. Peduncles about 1½ inches long. Spathes oblong cuspidate ½ to ¾ inch long. Spadices shortly nude at the base. Male and female portions nearly equal, ovaries in about 5 series, no staminodes.

Malacca: Woods at the foot of Mount Ophir (Ridley). Rare. Endemic.

19. H. CRASSA, Ridley Journ. Bot. 1902, 36. Stem short and thick an inch long roots stout. Leaves fleshy elliptic mucronate base rounded 5 inches long 2 inches wide, nerves about 4 pairs not very prominent petioles stout 3 inches long sheathing for half their length with broad sheaths ½ inch wide at the base. Spadices few on peduncles 1 inch long, thick oblong 1¼ inch long beaked. Spadix an inch long base not nude. Male portion cylindric obtuse as long as the female. Ovaries ovoid. Stigmas discoid.

Selangor at Ginting Peras and Kajang (Ridley). Rare. Endemic.

20. H. SCORTECHINII, Hook. fil. Fl. Brit. Ind. VI. 534. Rhizome creeping stout. Leaves elliptic or oblong lanceolate or oblanceolate acuminate mucronulate base narrowed acute or obtuse nerves

5 to 7 pairs 5 to 7 inches long by 1-2 wide deep green with a velvety gloss, petiole 6 inches long. Peduncles slender 4 inches long. Spathe large 1½ inch long, broad oblong cuspidate dark green. Spadix white base not nude. Male portion rather longer than the female. Ovaries globose. Stigma small discoid, about 6 series.

Perak (Scortechini), Ulu Bubong in dense bamboo forests 400-600 feet elevation (King's Coll. 10603). Endemic.

21. H. MIXTA, Ridl. Journ. Bot. 1902, p. 36. Rhizome thick. Leaves elliptic or oblanceolate base cuneate apex acuminate rather thin textured 9 inches long, 3 inches wide, prominent nerves numerous about 5 pairs rather more so petiole 6 inches long broadly sheathing for ⅙ of its length. Spadices very many about 11 peduncles slender 3 inches long. Spathes oblong shortly cuspidate ¾ to 1 inch long. Spadices shorter. Male portion cylindric acute 3 times as long as the female with abortive female flowers mixed with the males to the top. Females numerous. Ovules numerous.

Pahang: Tahan River woods (Ridley).

EXCLUDED SPECIES.

H. singaporensis, Regel. Ind. Sem. Hort. Petrop. (1869), 18. Garten. Flora 1870, 53. Hook. fil. Fl. Brit. Ind. VI. 537. "Singapore." The plant thus labelled at Kew is a species which has long been cultivated in gardens at Singapore, the history of which is not known. It is not however a native of the peninsula as far as is known, but is traditionally stated to have originally been obtained from Calcutta. It differs however from Regel's description in having the petioles and spathes completely red.

11. SCHISMATOGLOTTIS, Zoll. and Mor.

Herbs with a short rarely elongate stem. Leaves herbaceous ovate or lanceolate, often cordate, petiole sheathing shortly. Spathe cylindric constricted above the female inflorescence upper half deciduous. Spadix included, male portion terminal usually clubbed, or terminal portion sterile of oblong neutral flowers. Stamens 2 or 3. Anthers truncate, prismatic. Female portion separated from male by a bare portion, or abortive flowers. Pistils flask-shaped 1 celled. Stigma discoid. Ovules many.

Species 15. Malaya and Pegu.

Leaves distinctly cordate at base.

Spadix clubbed at the top, free to base . . 1. *S. calyptrata.*
Spadix apex conic narrow, free to base . . 2. *S. mutata.*
Spadix adnate to spathe for half its length 3. *S. minor.*

Leaves rounded at the base.

Petiole edge crenulate	.. 4. *S. Scortechinii.*
Petiole edge not crenulate.	
Stem short and thick	.. 5. *S. Wallichii.*
Stem slender far creeping ..	.. 6. *S. brevicuspis.*
Leaves narrowed to the base.	
Peduncles very short	.. 7. *S. marginata.*
Peduncles long slender	.. 8. *S. longifolia.*

1. S. CALYPTRATA, Zoll. and Mor. Syst. Verz. p. 83. Stem rather large. Leaves ovate cuspidate cordate, sinus usually deep, lobes rounded 9 inches long, 5 inches wide, light green petiole 9 inches to a foot long, sheathing for ¼ of its length. Peduncle 2 to 4 inches long in flowers 6-7 inches long in fruit. Spathe 3 inches long, basal portion swollen nearly an inch through 1 inch long deep green. Upper portion convolute much swollen 1¾-2 inches long cuspidate, greenish white, veins darker. Spadix floriferous to base 2½ inch long, stout, apex clubbed blunt ¾ inch long of sterile males, below this fertile males ¾ inch, narrowed at the base, flowers small oblong, at the narrowed portion are some abortive males and below some disc like abortive females. Fertile female portion 1 inch long, ovaries green oblong narrowed at the base, stigma very small here and there a few white clubbed neuters interspersed. Fruit oblong thin whorled 2 inches long. Seed oblong elliptic very small olive coloured ribbed. Engler. Arac. 352. Hallier. Bull. Herb. Boiss. VI. 620. *Sch. latifolia,* Miq. Fl. Ind. Bat. III. 214. Bot. Zeit. 1856, p. 565. *Sch. longipes,* Hook. fil. Fl. Brit. Ind. VI. 538 (not Miquel).

var. (a). *concolor.* Hallier. l.c. Leaves entirely plain green.

Singapore: Bukit Timah; Pahang: Tahan River; Penang Waterfall Gardens (2828).

var. (b). *picta.* Hallier. Ann. Buitenz. XIV. 2, 260. *Sch. picta,* Schott. Oesterr. Bot. Zeitschr. VIII. 317. Teysm. and Binn. Tijdsch. Ned. Ind. XXVII. p. 25. Engler. Arac. 350.

Leaves light green with a yellow green band on each side of the midrib.

Singapore: Bukit Timah (Ridley 4602); Johor: Pengaram, Batu Pahat; Pulau Tioman; Negri Sembilan: Perhentian Tinggi; Pahang: Tahan River (Ridley); Selangor: Petaling, Kuala Lumpur Caves; Perak (Scortechini 622a), Larut Hills; Penang: Tanjong Tokong, Waterfall (Curtis 2828).

var. *albidomaculata,* Hallier l.c. Leaves darker green with white spots.

Selangor: Pahang Track (Ridley), alt. 2000 feet. Distrib. Java, Sumatra, Amboina, Celebes, Borneo.

Common in woods, especially rocky ravines. The commonest form is the var. *picta*. Hallier has I think rightly put together a number of various forms, under *S. calyptrata,* and probably more of the garden forms under other names should be added. Being a very succulent plant the specimens in various herbaria are often bad, and usually the markings of the leaf quite disappear. There is a considerable amount of variation in the form of the leaf, often due to age and some forms resemble very much *S. Wallichii*. There are also frequently differences in the flowers chiefly among the sterile ones, and the number of staminodes among the pistils is very variable, some spadices having only one or two while in others they are abundant.

2. S. MUTATA, Hook. fil. Fl. Brit. Ind. VI. 538. Stem sometimes 2 feet long, and nearly an inch through. Leaves ovate cordate or subsagittate acute, lobes rounded, nerves 18 to 20 pairs, 6-9 inches long 4-5½ inches wide petiole 9 inches long, sheathing for ⅓ or ½ of its length. Peduncles several 2 to 4 inches long. Spathe nearly 5 inches long very narrow acuminate tip recurved, slightly constricted much below the middle. Spadix nearly as long acute slender. Sterile apex narrow conic acute 1 inch long flowers oblong top square, very large, male portion 1 inch long, below it a bare portion, narrower (covered with neuters according to Hooker). Neuters below narrow cuneate with a broad top. Female portion as long as the male, ovaries subglobose with a small discoid stigma, at the base some abortive flat topped pistils.

Perak (Scortechini), Goping (King's Collector). Endemic.

3. S. MINOR, Hook. fil. Fl. Brit. Ind. VI. 538. A weak long creeping plant with a slender stem, bearing scattered leaves. Leaves ovate lanceolate or elliptic subacute 2-2½ inches long by 1 inch wide base rounded cordate, back of midrib and petiole scurfy. Petiole winged above slender 3 inches long. Spadices few or 1, peduncles slender, 2-2½ inches long. Tube of spathe ⅔ inch long, limb oblong, ovate acute hardly contracted at its base. Spadix with the female inflorescence adnate for nearly ½ its length to the spathe. Ovaries scattered below globose, ovules few. Placentas 2. Stigma pulvinate, sessile.

Perak (Scortechini). The specimens in Herb. Kew are bad, and Scortechini's drawing only of a fruiting plant. Endemic.

4. S. SCORTECHINII, Hook. fil. l.c. Stem rather short about 2 inches long. Leaves ovate acuminate base broad slightly retuse 6 to 9 inches long 3½ nearly 4 inches wide dark green marbled with grey, nerves about 26 pairs nearly horizontal petiole 4-5 inches long sheathing for about ⅓ of its length grooved and crisped along the edge with a crenulate margin. Peduncle 1 inch long in flowers lengthening to 2 inches in fruit. Spathe greenish white 2-3 inches long, base ⅓ of

its length, limb but little dilated acuminate. Spadix sessile, male portion cylindric blunt twice as long as the rest of the spadix, flowers oblong white, below this a narrow portion of oblong neuters. Female portion short ½ inch long. Ovaries oblong with a flat stigma. *S. brevipes,* Hook. fil. l.c. p. 538.

Johor: Gunong Pulai (Herb. H. B. Singap.); Selangor: Rawang, Ginting Bidai (Ridley 7669); Pahang: Tahan River (Ridley); Perak (Scortechini 148b), Bujong Malacca (Ridley). Endemic.

Banks in woods. Very near *Sch. crispata,* Hook. fil. Bot. Mag. (6576) and perhaps only a variety but the spathe is considerably larger in that, *S. brevipes* is apparently a young plant. The specimen (Scortechini 623a) in Herb. Kew is very bad, and only in fruit. The drawing shows a slight difference, the plant being probably too young.

5. S. Wallichii, Hook. fil. Fl. Brit. Ind. VI. 537. Stem short. Leaves several lanceolate acuminate with a long point bright green base oblique broad and rounded or narrowed rarely shortly bilobed 6 to 9 inches long, 1 to 3 inches wide, nerves about 12 pairs, petiole 2 to 9 inches long sheathing half way. Peduncle 3 to 5 inches long. Spathe 3 inches long, convolute portion green 1 inch, limb broad with a long point white. Spadix 2-2½ inches long, rather slender. Barren portion cylindric blunt, ½ inch long. Male portion ¾ inch long. Female as long or longer base nude, pistils very numerous and small.

Singapore: Bukit Timah (Ridley 6319), (Wallich 8962); Johor; Malacca: Bukit Sadanen (Derry 345); Sungei Ujong: Bukit Tumiang (Herb. H. B. Singap.); Selangor: Bukit Berjuntai (Ridley 7668); Perak: Goping (King's Coll. 969), Ulu Bubong (King's Coll. 10255), Tapa (Wray 830), Province Wellesley, Kubang Ulu (Curtis); Kelantan: Kwala Lipis (Dr. Gimlette).

var. *fasciata.* Leaf deep blackish green with a grey feather on each side of the midrib, leaf more coriaceous.

Selangor: Pahang Track (Ridley).

The var. *oblongata,* Hook. fil. has a more rounded base to the leaf, than some of the other forms, but it grows with them. Wallich's original specimen has a grey central feather as has according to the label Wray's Tapa plant. This form also occurs on Bukit Timah and in Selangor.

6. S. brevicuspis, Hook. fil. l.c.c. Stem creeping and rooting 4 inches long or more. Leaves rather distant lanceolate to ovate lanceolate cuspidate base rounded, rather thin textured, nerves curved ascending joining an intramarginal vein, 4 to 6 inches long 2½ inches wide, petiole 4½ to 8 inches long midrib on back of the blade and other nerves often finely scurfy, and upper surface often minutely pustular. Peduncle slender an inch long. Spathe narrow 2 inches

long, upper half but little dilated terminating in a long beak. Spadix shorter, base female narrowed upwards to a bare portion. Ovaries flask-shaped. Stigma discoid, above a short neuter portion with club-shaped bodies, male portion cylindric flowers oblong, above it a thicker terminal conic sterile portion, of wedge shaped bodies. Fruiting portion ½ inch long ¼ inch wide narrowed above.

Malacca base of Gunong Mering, Ophir; Selangor: Ginting Peras (Ridley); Pahang: Tahan River Woods (Ridley); Perak: Scortechini 612a); Penang Waterfall (Curtis 1884). Hill Woods. Endemic.

7. S. MARGINATA, Ridley Journ. Bot. 1902. XL. p. 36. Stem stout almost woody with thick roots. Leaves lanceolate acuminate narrowed into the petiole, margin undulate, nerves about 10 pairs ascending, 3 to 6 inches long 1 to 2 inches wide, petiole 2 to 3 inches long sheathing for about ⅓ of its length, sheath strongly crisped. Peduncle very short ½ inch long. Spathe 1¾ inch narrowed below hardly constricted cuspidate. Spadix 1½ inch long, upper portion cylindric male 1 inch long, flowers irregularly rhomboidal below a narrowed portion covered with neuters. Female portion short few flowered. Fruit broad ½ inch long, seed oblong elliptic strongly ribbed.

Pahang: Tahan River Woods (Ridley). Rare. Endemic.

8. S. LONGIFOLIA, Ridley Journ. Bot. 1902, XL. 37. Stem short. Leaves elliptic to oblanceolate or lanceolate mucronate narrowed at the base 6-12 inches long 1½ to 3½ inches wide, nerves fine ascending, petiole 6 to 15 inches long sometimes very broad. Spadices numerous peduncles slender 5 to 12 inches long. Spathe slender narrow not constricted in the middle white 2 inches long with a beak ½ inch long. Spadix slender 1 inch long apex ½ inch long of sterile flowers cylindric conic orange, male portion short then a short portion of neuters. Female portion ¼ inch long. Pistils globose white scattered. Fruit an inch long narrowed at base thickened upwards. Seeds ⅛ inch long oblong strongly ribbed.

Perak: Larut Hills (Curtis 2082), (King's Collector No. 1967). Endemic. On banks at about 2500 feet alt.

12. PIPTOSPATHA, N. E. Br.

Terrestrial herbs stems short stout. Leaves lanceolate base narrowed, petiole long. Spathes short and broad not constricted in the middle. Upper part deciduous. Spadix short sessile much shorter than the spathe. Male portion rounded, terminal, anthers with the connective prolonged horned or hemispheric. Female portion as long, ovaries elliptic, stigma orbicular. Placentas 2 or 3, parietal, ovules basal attached by a funicle. Fruiting spathe funnel-shaped. Seeds fusiform tailed at each end.

Species 6. Malay Peninsula and Borneo.

Leaves broad	1. *P. Ridleyi.*
Leaves narrow	2. *P. elongata.*

1. P. Ridleyi, Hook. fil. Bot. Mag. 7410. Stem very short. Leaves lanceolate or elliptic lanceolate undulate acute, nerves about 4 pairs dark green, or spotted with light green 2-6 inches long 1-3 inches wide, petiole 3-6 inches long red sheathing at base only. Peduncles 4-5 inches long stout reddish. Spathe an inch long broad ovoid apex recurved beaked, nodding, base green above striped and spotted pink. Spadix ¼ the length cylindric thick rounded. Male portion as long as the female. Anthers quadrate oblong, cells lateral, connective hemispheric pubescent. Female, ovaries ovoid stigma sessile discoid. A ring of minute clubbed neuters at the base. Fruit obconic ½ inch broad.

Johor: Gunong Panti (Ridley); Gunong Janeng (Kelsall), Gunong Pulai (Ridley). On rocks in streams. Endemic.

2. P. elongata. Stem stout roots thick with numerous rootlets. Leaves lanceolate, or oblanceolate acute with a tubular mucro, base cuneate, margin undulate nerves prominent beneath when dry 7 or more pairs, 2-9 inches long ½-3 inches wide petiole 1 to 6 inches long sheathing at the base only. Peduncles 1½-5 inches long. Spathe nodding fusiform beaked cream colour 1-2 inches long thick. Spadix short. Male portion cylindric blunt. Stamens narrow oblong, connective broad pubescent. Female portion shorter ovaries crowded obcuneate. Stigma small. Fruiting spathe cup-shaped nearly ½ inch across. Seeds fusiform tailed. *Rhynchopyle elongata,* Engler. Malesia 1289, t. 23. f. 3-15. Icones. Arac. 199. *Schismatoglottis elongata,* Engler. Bull. Soc. Ort. Tosc. IV. 298. Hook. fil. Fl. Brit. Ind. VI. 539.

Malacca: Tampin Hill (Goodenough 1850); Pahang: Tahan River (Ridley); Perak (Scortechini), Larut Hills, Bujong Malacca (Ridley); Selangor: Pahang Track (Ridley). Distrib. Borneo. On rocks in mountain streams from 1000 to 3000 feet.

13. Anadendrum, Schott.

Climbing epiphytes. Leaves entire or pinnatifid, distichous, petiole geniculate at the top. Spathe ovate spreading caducous. Spadix shorter cylindric, base nude, flowers bisexual dense. Perianth absent or a thin semicircular or capsular limb. Stamens 3 to 6, filaments broad oblong short. Anthers terminal linear oblong, cells reniform. Ovaries obconic 1 celled, top flat. Stigma linear, ovules 1 rarely 2 basilar. Drupes 4-angled oblong fleshy. Seeds exalbuminous, testa thick.

Species 4 or 5. Malayan.

Petiole shorter sheathing.

Leaves narrowed at the base	1. *A. latifolium.*
Leaves broad at the base	2. *A. montanum.*
Petiole winged to the top	3. *A. marginatum.*

1. A. LATIFOLIUM, Hook. fil. l.c. Stem 4 to 6 feet long ¼ inch through woody. Leaves oblong elliptic inaequilateral narrowed at the base a little 8-10 inches long 4-5 inches wide, rather stiffly coriaceous, dark green mottled with lighter, nerves conspicuous about 20 pairs petiole 6-7 inches long, sheathing at the base only. Peduncle 4 inches long. Spathe 2 to 3 inches long white within greenish outside, beak ¼ to ½ the length of the body. Spadix cylindric 1½ inch long nude base ¼ inch.

Sungei Ujong: Bukit Sulu (Herb. Cantley); Perak: Goping (King's Coll. 5961). Native name "Akar Surudang." Climbing on trees. Endemic.

2. A. MONTANUM, Schott. Bonplandia. V. 1857, Prodr. 371. Stem creeping 3 or 4 to 6 or more feet terete, internodes 1 inch long. Leaves ovate oblong to oblong lanceolate coriaceous dark green, sometimes cordate, 6-8 inches long 3½- wide, petiole slender, sheath narrow 2-3 inches long. Peduncles several 2-3 inches long. Spathes glaucous cylindric cuspidate 1 inch long cusp ½-1 inch. Spadix an inch long ⅛ inch through. Perianth thin white edged black surrounding the flower on 3 sides and projecting shortly above, oblong truncate. Stamens 3, filament broad thick cuneate oblong fleshy, connective narrower black, anther cells linear erect, pale yellow. Ovary cuneate broad topped stigma linear. Drupe quadrangular red. Engler. Arac. 97. Ic. Ined. No. 83. Hook. fil. Fl. Brit. Ind. VI. 540. *Scindapsus montanus,* Kunth. Enum. III. 64. Miq. Fl. Ind. Bat. 184. *Pothos malayanus,* Miq. l.c. Suppl. 596. *Calla montana,* Bl. Cat. Hort. Buit. and Flora 1825, 147.

Singapore: Garden Jungle, Changi (Ridley 4601); Johor: Bukit Tana Abang (Kelsall); Malacca (Griffith); Selangor: Sungei Hudang (Ridley); Selangor: Kuala Lumpur Caves (Ridley 8172); Sungei Ujong: Bukit Sulu (Herb. H. B. Singap.); Perak: Ipoh (Curtis), Gunong Batu Putih (Wray 944); Pahang: Kuala Tembeling (Ridley); Dindings: Pulai Sembilan (Ridley 3034), Lankawi (Ridley); Penang (Wallich 4444 *Pothos elegans*); Dindings: Lumut. Distrib. Tenasserim, Borneo.

A peculiarly badly named plant as it is peculiarly a low country species, through Wray did find it at 3400 feet elevation. The leaves are very variable, sometimes almost equilateral, at others very unequal sided; the base is usually broad rounded and sometimes slightly cordate, at others cuneate narrowing into the petiole.

It is know to the Malays as "Akar Asam Tebing Darat." "Akar Meroyan Sunbang" and "Sugunja." The leaves are eaten in curries and the roots used in native medicine. Abundant in woods in the low country, climbing on small trees low down. Distrib. Malay Islands.

3. A. MARGINATUM, Schott. in Oestr. Bot. Wochenbl. 1857, 117. Prodr. 390. Stem woody ¼ inch through, with numerous woolly roots. Leaves crowded or distant ovate to lanceolate inaequilateral, acute base broad or acuminate, nerves about 16 pairs, 5-9 inches long 3-4 wide, petiole 3 to 9 inches long broadly winged almost to the top. Spathes numerous, peduncles 3 inches long rather slender. Spathes 1½ inch long thick, cusped. Spadix cylindric an inch long, nude base ¼ inch. Perianth cupular. Stamens 6. Anthers oblong filament short and broad, ovary. Drupe oblong truncate red ¼ inch long. Engler. Arac. 96. Hook. fil. l.c. 540.

Pahang: Tahan River, Pulau Tijau (Ridley 2396); Selangor: Kuala Lumpur Caves, Ginting Bidai (Ridley); Perak (Scortechini, King's Coll.); Penang (Porter in Wall. Cat. 4443. *Pothos marginatus*). Distrib. Sumatra.

14. SCINDAPSUS.

Climbing or creeping ½ shrubby plants. Leaves ovate or lanceolate, petioled, petiole usually strongly winged. Spathe boat-shaped deciduous. Spadix covered with flowers to the base. Flowers bisexual with no perianth. Stamens 6, filament short or moderately long oblong flat anthers ovate. Pistils crowded top more or less hexagonal Stigma small pulvinate. Ovaries unilocular with 1 rarely more ovules, one-seeded.

Species about 10. India, Malaya and Australasian.

This genus only differs from Raphidophora in its single celled ovary and single rather large seed.

Leaves ovate cordate, mottled	1. *S. picta.*
Leaves ovate not cordate dark green	2. *S. Scortechinii.*
Leaves oblong lanceolate broadly winged to the knee.	
Spadix 1¼ inch long	3. *S. hederacea.*
Spadix 4 to 6 inches long	4. *S. perakensis.*
Leaves very coriaceous oblong or lanceolate, narrowly winged for ¾ the length of the petiole	5. *S. Beccarii.*

1. S. PICTA, Hassk. Cat. Hort. Bogor. 1844, p. 58. Stem very long slender about 20 feet long. Leaves (young) ovate orbicular, or ovate falcate cordate green blotched with white, 3 inches long by 2 inches wide, petiole slender 1½ inch long; (adult) lanceolate falcate

acute or ovate to cordate 4½ to 6 inches long, by 1½ to 5½ inches wide coriaceous dull green, petiole stout ½-¾ inch long, sheathing to the top. Peduncle ½ to ¾ inch long thick. Spathe ovate cuspidate white thick caducous, 2 inches long. Spadix stout 1¼ inch long. Flowers large, ⅛ inch across white, stamens 6. Anthers conic ovoid, filaments exceedingly short, ovary with a broad hexagonal top. Stigma small not linear. Ovary 1 celled, one ovuled. Hassk. Pl. Jav. Rar. p. 159. Miq. Fl. Ind. Bat. III. 183. (in part) Schott. Prodr. 393. Engler. Arac. 252. Hook. fil. Fl. Brit. Ind. VI. 541. *Sc. pothoides,* Schott. Prodr. 394 (not Miquel). *Sc. argyroea,* Engl. l.c. 255.

The whole peninsula from Patani to Singapore, common in forests.

Singapore: Bukit Timah, Changi (Ridley); Perak: Larut (King's Coll. 2568, 6471); Patani: Legeh (Machado). Distrib. Borneo, Java.

2. S. Scortechinii, Hook. fil. Fl. Brit. Ind. VI. 541. Stem creeping over rocks and trees long ⅛ inch through and slender. Leaves ovate coriaceous dark green acute base rounded, or lanceolate 5 inches long by 1½ to 3 inches wide, petiole 3 to 4 inches long sheathing for the whole length. Peduncle 1-2 inches long stout. Spathe 2 inches long ovate acute white. Spadix 1-1½ inch long, ¼ inch thick white. Flower top elliptic rounded, stigma pulvinate. Seed one reniform large.

Selangor: Bukit Hitam, Bukit Kutu (Ridley 7666); Perak: Larut Hills (Wray), Bujong Malacca (Ridley 9795), Gunong Batu Putih (King's Coll. 8214); Kedah: Gunong Jerai (Ridley). Not rare at an altitude of 3-4000 feet. Endemic.

3. S. hederacea, Schott. Bonplandia V. 1857, 45. Stem 30 feet tall or more, climbing on trees and rocks terete ½ inch through. Leaves falcately lanceolate to oblong, inaequilateral coriaceous deep green, many nerved acute or subacute, base narrowed, rarely broad 4-8 inches long, by 1 to 4 inches wide, petiole 3-4 inches long sheathing nearly to the top. Peduncle 1 to 3 inches long. Spathe boat-shaped acuminate thick white, 3 inches long. Spadix 1¼ inch long cylindric blunt white ¼ inch through. Flowers 4-5 seeded ¼ inch across. Stamens shorter, filament obcuneate very short. Anthers large obovate opening by pores at the top. Stigma small linear yellow. Fruit grey pulpy one seeded. *Scindapsus hederaceus,* Schott. Bonplandia V. 1857, 45. Prodr. 395. Engl. Arac. 253. Hook. fil. Fl. Brit. Ind. VI. 542. *Sc. pothoides,* Miq. Fl. Ind. Bat. III. 184. *Sc. inquinatus,* Schott. Ann. Mus. Lugd. 283.

Singapore: Serangoon Road (Ridley 9173), Sungei Buloh (1169); Johor: Ulu Batu Pahat (Kelsall); Malacca (Maingay, Griffith); Selandor (Herb. H. B. Singap.); Pahang: Pekan (Ridley

1099); Selangor: Caves Kulala Lumpur; Perak: Kuala Woh (Wray 857); Penang: Government Hill (Curtis 1742); Kedah: Yan (Ridley). Distrib. Java.

Native names "Akar Lubang Alah," "Akar Ular." A decoction of the stem is used for rheumatism. Engler. Ic. Ined. 13, seems rather to represent *R. picta* than *R. hederacea*.

4. S. PERAKENSIS, Hook. fil. Fl. Brit. Ind. VI. 542. Stem very stout 30 to 40 feet long. Leaves oblong lanceolate acuminate elliptic or nearly ovate coriaceous closely ribbed 9 to 10 inches long 2½-3 inches wide, petiole 4 to 6 inches long, broadly winged to the base. Peduncle rather stout 4 inches long. Spathe green (not seen). Spadix 4 to 6 inches long ½ to 1½ through in fruit. Flowers ⅛ inch across top rounded lobed rugose (when dry). Stigma linear. Fruit slatey blue ⅓ inch across. Seed lenticulate ⅙ diameter black.

Malacca: Batu Tiga (Goodenough 1399); Sungei Ujong: Bukit Sulu (Herb. H. B. Singap.); Selangor: Kuala Lumpur Caves; Perak: Trong (Wray 3189), Ulu Bubong (King's Coll. 10692). Native name "Akar Surundang." Endemic.

5. S. BECCARII, Engl. Bot. Jahrb. 1, 182. Stem usually short, 2 or 3 feet long and rather stout. Leaves stiffly coriaceous dark green lanceolate acute, or oblong blunt nerves numerous 6 to 15 inches long 2 to 5 inches wide, petiole 4 to 6 inches long, sheathing for most of its length. Peduncle rather thick an inch long. Spathe boat-shaped coriaceous white 1½ to 3 inches long. Spadix 1-3 inches long thick cylindric blunt. Flowers transversely oblong or hexagonal white. Perianth cupular adnate to the ovary but more or less detachable. Stamens shorter, filaments flat linear oblong, longer than the anther. Anther acute. Pistils prismatic. Fruit greyish white. Seed 1. Engler. Malesia I. 277. Hook. fil. l.c. 542. *Sc. crassipes,* Engler. Bot. Jahrb. l.c. Becc. Malesia 1, 277.

Perak: Larut (Kunstler No. 7477), (Scortechini); Dindings: Pangkor, Lumut (Ridley); Kemaman (Dr. Johnston); Tringanu (Ridley). Distrib. Borneo and Sumatra.

There are two forms of this one with narrow leaves and a small inflorescense, the other with much broader leaves and large spadix, but they seem to pass into each other. The plant occurs usually on rocks above the sea of tidal rivers.

15. RAPHIDOPHORA.

Climbing shrubs. Leaves petioled (when adult) shortly winged, blade entire lanceolate or oblong, or perforate or pinnatifid usually coriaceous. Spathe cylindric or boat-shaped usually deciduous. Spadix flowered to the base, or very rarely stipitate. Perianth 0. Stamens 3-6, filaments linear flat. Pistils with a more or less hexagonal

top. Stigma pulvinate or linear. Ovary 2-3 celled many ovuled. Seeds 1 or more in each cell, small, albuminous.

Species about 30 India, Malaya, Australasia.

From *Scindapsus* this genus can only be separated by its possessing more than one seed in the two or three celled ovary. From *Anadendrum* also by the absence of a perianth, and by the fruit, which is white and hardly drupaceous, or projecting from the rachis. *R. Hugeliana* is intermediate between *Anadendrum* and *Raphidophora*.

Many species of *Raphidophora* though abundant in our forests, seem to flower very rarely, and when they do so, only produce the spadices at the top of lofty trees where they are invisible from the ground. Nearly all are very polymorphic in the leaves, those on young plants and on the long pendulous shoots from the top being utterly dissimilar from the adult ordinary leaves. The bigger species when high up on trees produce aerial roots 50 to 60 feet long which descend to the ground.

Leaves entire ovate cordate	1. *R. humile.*
Leaves oblong ovate base rounded.	
Petiole long	2. *R. gracilipes.*
Leaves lanceolate or oblong lanceolate.	
Spadix short one inch long.	
Leaves narrow an inch across	3. *R. minor.*
Leaves broad thin 2-3 inches	4. *R. Lobbii.*
Spadix about 2 inches long.	
Leaves thick coriaceous	5. *R. crassifolia.*
Leaves thin coriaceous.	
Lanceolate falcate	6. *R. Wrayi.*
Ovate lanceolate	7. *R. Scortechinii*
Spadix long 5 to 10 inches.	
Leaves elliptic nerves very close	8. *R. Maingayi.*
Leaves thin hardly coriaceous.	
Petiole narrowly winged	9. *R. Kunstleri.*
Petiole broadly winged	10. *R. lactevirens.*
Leaves very coriaceous 2-3 feet long.	
Spadix 10 inches	11. *R. giganteum.*
Leaves pinnatifid. Spadix not stipitate.	
Blade but little lobed base cuneate ..	12. *R. Beccarii.*
Blade broadly ovate cordate, lobes few ..	13. *R. tetrasperma.*
Blade deeply lobed broad, about 9 pairs ..	14. *R. Korthalsii.*
Leaves pinnatifid and perforate.	
Spadix stipitate	15. *R. Hugeliana.*

1. R. HUMILE. Stem slender about ¼ inch through far creeping on rocks. Leaves ovate cordate cuspidate dark shining green 4 inches long 3¾ inch wide, petiole 5 inches long sheathing at the base only. Peduncle 2 inches long with brown sheathing acuminate leaves at the base. Spathe ovate boat-shaped fusiform in bud 1¼ inch long whitish finally brown purple. Spadix much shorter cylindric quite blunt 1 inch long white. Flowers about 6 series. Stamens 4 filaments linear flat. Anthers ovoid. Stigmas circular. *Amydrium humile,* Schott. Ann. Lugd. Bat. 1, 127. Engler. Arac. 100. Ic. Ined. 152. *Epipremnum humile,* Hook. fil. Fl. Brit. Ind. VI. p. 549.

Perak: Bujong Malacca (Curtis); Penang (Maingay 1560), Government Hill (Curtis 1855). Distrib. Sumatra. Abundant creeping on top of large rocks in woods, seldom flowering.

2. R. GRACILIPES, Hook. l.c. 545. Stem 20 to 40 feet long, 1 to 1½ inch through. Leaves oblong ovate cuspidate unequal sided slightly narrowed at the base or not rather thin, nerves numerous slender conspicuous when dry nearly horizontal 7 inches long 3½ wide, petiole slender 7 to 9 inches long channelled, with a low sheathing margin about half way up. Knee rather long. Peduncle short about an inch long with a longer sheath rounded. Spathe coriaceous 3 inches long by 1 wide lanceolate cuspidate yellow cream colour. Flowers regularly hexagonal at top, small. Stigma pulvinate elevated. Stamens 6.

Perak: Larut (King's Coll. 2102). Ulu Bubong at 400 to 600 feet elevation (King's Coll. 10271). Endemic.

3. R. MINOR, Hook. fil. l.c. 544. Stems slender creeping rather woody less than ¼ inch through. Leaves elliptic lanceolate often slightly falcate acute or subacute mucronulate, base narrowed or not, 3 to 4 inches long ½ to 1 inch wide dull green nerves slender numerous, petiole 1 inch long slender. Peduncle ½-1 inch long. Spathe cylindric 1-2 inches long including the beak white or green. Spadix rather slender 1 inch long or less yellowish. Flowers very small top rounded not angled. Stigma small circular. Fruit ⅙ inch long. Seed 6 elliptic flat thin light brown.

Singapore: Toas (Ridley 4608, 6904); Johor: Kota Tinggi (Ridley), Sungei Tebrau; Pahang: Pekan (Ridley); Malacca: Bukit Kayu Luang (Herb. H. B. Singap. 5843) Griffith; Perak: Malang (Wray 2497). Climbing plants on stumps and trees. Native name "Kulamayiang Ayer." A decoction of the plant used in delayed confinements. This plant grows in immense abundance on the Tebrau River at Castlewood covering the trees along the river with a thick mat of stems. Distrib. Borneo.

4. R. LOBBII, Schott. Bonplandia V. 1857, 45. Stem slender ¼ inch through 4 angled below, 12-14 feet long. Leaves lanceolate

falcate or oblong cuspidate narrowed a little at the base 8-9 inches long 2-3 inches wide thinly coriaceous flaccid dull green above paler beneath nerves prominent beneath 12 pairs or more numerous petiole 1-3 inches long with a thickened knee at the base ½ inch long, in old leaves, channelled up to the upper knee. Peduncle thick an inch long. Spathe cylindric cuspidate thick 1 inch long yellow. Spadix ¾ inch long in flower, 1 inch in fruit blunt cylindric. Stigma discoid. Ovary 2 celled. Seeds 6 elliptic narrow flattened dark brown. Schott. Prodr. 379. Engler. Arac. 240. Hook. fil. Fl. Brit. Ind. VI.

Singapore: Bukit Timah, Chan Chu Kang (Ridley); Johor: Batu Pahat (Ridley); Malacca: Selandor (Herb. H. B. Singap.); Perak: Ulu Bubong (King's Coll. 10571), Larut (King's Coll.). Distrib. Borneo.

On low trees and shrubs in jungle swamps common. Native name "Akar Asam Tebing Paya." The leaves are used in curries. This plant varies a good deal in the form of the leaf which is sometimes quite narrow and falcate, at others broad and straight.

5. R. CRASSIFOLIA, Hook. fil. Fl. Brit. Ind. VI. 543. Stem 20 to 30 feet long ¼ inch thick, 4 angled. Leaves 6-7 inches long 1½ to 2 inches wide lanceolate oblique minutely cuspidate, base narrowed acute, thickly coriaceous nerves numerous, very obscure above, invisible beneath when dry, petiole 1¼ to 2½ inch long slender. Peduncle very short ½ inch long. Spathe cylindric very shortly cuspidate thickly coriaceous 3 inches long cream colour. Spadix "purple and yellow."

Selangor: Rawang Camphor Forest (Ridley); Perak: Batang Padang (Kunstler 8111). Climbing on trees rare. Endemic.

6. R. WRAYI, Hook. fil. Fl. Brit. Ind. VI. 544. Stem woody 30 to 40 feet long ⅛ inch through, angled. Leaves narrowly lanceolate acuminate falcate narrowed at the base thinly coriaceous 8-9 inches long 1¼ inch wide, nerves numerous fine parallel with anastomosing nervules, petiole slender 1½ inch long channelled. Peduncle 1 to 2 inches long fairly stout. Spathe 1¼ inch long ⅜ inch wide cylindric cuspidate. Spadix oblong blunt 1½ to 2½ inch long. Stamens 2. Apex of flower small rhomboidal stigma pulvinate. Fruit very small. Seeds 6 narrowly elliptic deep brown.

Perak: Larut Hills (Ridley 2960), Gunong Batu Putih (Wray 1145). Endemic. Climbing on trees.

7. R. SCORTECHINII, Hook. fil. l.c. 545. Stem creeping on stones nearly as thick as the little finger. Leaves ovate lanceolate inaequilateral caudate acuminate base cuneate subcoriaceous, primary nerves 14 to 20 pairs strongly raised on both surfaces (when dry) spreading and arched, petiole 4 to 6 inches long broadly channelled

up to the limb. Peduncle 3-4 inches long. Spadix 2 inches long by $\frac{3}{4}$ wide. Stigma elliptic sessile. Seeds winged with the lateral wings oblique according to Scortechini's notes but he does not figure them so.

Perak: without locality (Scortechini 247). A specimen in fruit and a drawing at Kew. Endemic.

8. R. Maingayi, Hook. fil. l.c.c. Stem 20 to 30 feet long 4 angled, with flat side nearly $\frac{1}{2}$ inch through. Leaves on young stems lanceolate falcate 3 inches long $\frac{1}{2}$ inch wide petiole $\frac{1}{8}$ inch long; adult elliptic obtuse mucronulate base cuneate or rounded 7 inches long, 2 inches wide, keel prominent nerves above elevated close, very obscure beneath petiole 3 inches long slender keel rather thick. Peduncle 2 inches long. Spathe cylindric nearly 5 inches long $\frac{3}{4}$ inch through, thick and leathery. Spadix nearly as long. Flowers $\frac{3}{16}$ inch across. Stamens 6. Ovary hexagonal. Ovules numerous. Stigma depressed.

Singapore: Bukit Timah; Malacca (Maingay); Panchur (Goodenough 1296). Very common in Singapore on rocks and trees in forests, but very rarely to be found in flower. Endemic.

9. R. Kunstleri, Hook. fil. Fl. Brit. Ind. VI. 546. Stem 40 to 60 feet long, 3 to 4 inches through. Leaves lanceolate falcate inaequilateral or oblong to oblong lanceolate acuminate submembranous base acute or cuneate 6 to 15 inches long 2 to 5 wide primary nerves prominent spreading and arched deep green, petiole slender 8 to 15 inches long, grooved and channelled up to the blade knee short. Peduncle 1-3 inches long stout. Spathe cylindric 8 inches long acuminate thick walled white, beak long and straight. Spadix cylindric 5-8 inches long. Flowers equally hexagonal at the top. Stigma discoid rather large elevated. Ovary 2 celled.

Perak: Larut 5 to 8000 feet elevation (King's Coll. 6796), Goping (King's Coll. 6538). Endemic.

10. R. laetevirens, Ridley Journ. Bot. 1902, 87. Stem long about 12 or 14 feet long creeping. Leaves herbaceous light green oblong lanceolate acuminate, with broad rounded bases, nerves very numerous conspicuous beneath 24 inches long 8 inches wide, petiole 8 inches long winged to the knee. Peduncle stout 3 inches long. Spathe cylindric 6 to 8 inches long thick. Spadix long cylindric 7 inches long $\frac{3}{16}$ inch thick. Flowers equally hexagonal. Stigmas discoid.

Selangor: Kuala Lumpur Caves (Ridley); Perak: Larut Hills (Derry); Penang: Penara Bukit (Ridley). Creeping over rocks and trees. Endemic.

11. R. GIGANTEUM. Stem 40 to 60 feet long and over an inch through green. Leaves 12 to 36 inches long 6 to 8 wide entire oblong very coriaceous dark green nerves very numerous fine and close apex blunt base rounded, petiole 8-15 inches long, sheathing for its whole length. Peduncle an inch long stout. Spathe 6 to 15 inches long nearly 2 inches through dull green cylindric cuspidate. Spadix yellowish white 10 inches long. Flowers ¼ inch across very narrow rhomboid longer than broad. Stamens white filament broad. Stigma linear depressed grey. *Epipremnum giganteum,* Schott. Bonplandia V. 1857, 45. Prodr. 389. Hook. fil. Fl. Brit. Ind. VI. 548. Engler Arac. 249. Bot. Mag. *Scindapsus giganteus,* Schott. Meletem I. 21 Kunth. Enum. III. 63. *Monstera gigantea,* Schott. Wien. Zeit. Schr 1829. Linnaea 1831. Litter. Ber. 53. *Pothos giganteus,* Roxb. Fl. Ind. 1, 434.

Singapore (Wallich 4442), Bukit Timah, Siglap (Ridley 9200); Malacca; Perak (Scortechini 111), Larut (King's Coll. 6681); Dindings: Lumut (Ridley); Penang (Roxburgh), Government Hill (Curtis 2889). Endemic. Common probably over the whole peninsula. Native name "Ringut." The spadices mixed with the dart-poison of the Sakais.

12. R. BECCARII, Engl. Bot. Jahrb. 1, 181. Malesia. I. 271. t. 19. fig. 6-9. Stem short and stout creeping, 15 to 20 feet (King's Collector) nearly half an inch through. Leaves lanceolate base cuneate entire when young, acuminate pinnatifid when old inaequilateral about 3 lobed, lobes falcate acuminate many nerved, reticulating nerves distinct when dry, deep green thinly coriaceous, 9-24 inches long, 3-7 inches wide, petiole rather slender 6 to 8 inches long knee short and distinct. Peduncle 6 inches long. Spathe cylindric cuspidate 3 inches long ¼ inch through cream colour. Spadix shorter cylindric blunt white. Flowers at the top rounded obscurely hexagonal. Stigma elevated circular. Hook. fil. Fl. Brit. Ind. VI. 546. *Epipremnum Beccarii,* Engler. Bull. Soc. Tosc. Ort. 1879, 269.

Selangor: Rawang (Ridley 7661), Ginting Bidai (7664); Pahang: Tahan River (Ridley 2387); Perak: Ulu Bubong (King's Coll. 10155); Penang: Penara Bukit (Ridley). Distrib. Borneo, Siam. On rocks in streams.

13. R. TETRASPERMA, Hook. fil. l.c. 548. Stem flexuous terete, internodes 3-4 inches long. Leaves broadly ovate or orbicular cordate often very unequal sided, lobes 1-2 broad acute cuspidate or acuminate 1-2 ribbed, petiole 3 inches or more long channelled up to the knee. Peduncle very stout 1-2 inches long. Spathe 1½-2 inches long turgidly cymbiform acute white. Spadix subclavate. Stigma a raised furrow. Berries 2 celled, ovules 2 in each cell.

Perak: no locality given (Scortechini). The specimen at Kew looks not unlike the cultivated plant known as *Pothos aurea but* I have never seen flowers of this.

14. R. Korthalsii, Schott. Ann. Mus. Lugd. Bat. I. 129. Stem 20 to 30 feet long ½ inch through densely crinite. Leaves large pinnatisect coriaceous deep green 18-24 inches long by 6-8 inches wide lobes oblong acuminate falcate about 9 pairs, lowest ones small 3 inches long by ½ inch wide, upper ones 5 inches long by 2 inches wide, reticulating nerves very prominent when dry. Petiole 9 inches long. Peduncles 2 to 9 inches long very stout. Spathes coriaceous numerous boat-shaped cylindric with a short stout beak 6 to 8 inches long ¼ to 1 inch through green edge cream colour. Spadix 2 to 6 inches long cylindric ½ inch through yellow. Flowers rounded small hexagonal filaments rather long. Anthers oblong. Stigma linear. Fruit ¼ inch across, top rounded and flat. Seeds 4 flattened ovoid brown. Engler. Arac. 247. Hook. fil. Fl. Brit. Ind. VI. 548.

Singapore: Bukit Timah not rare; Johor: Pulau Tinggi (Feilding); Perak: Larut Hills (King's Collector 6893); Penang: Government Hill (Maingay). Distrib. Java. Climbing high on trees.

15. R. Huegeliana, Schott. Bonplandia. V. 45. Prodr. 384. Stem 20 to 30 feet long stout ½ to ¾ inch through. Leaves in young plants lanceolate falcate distichous sessile appressed to the trunk of a tree often overlapping 2 to 7 inches long, ¾ inch to 3 inches wide; in older plants ovate acuminate with a retuse base and short petiole 3 inches long; in adult deeply pinnatifid or pinnatisect often perforate, lobes 5 to 14 oblong truncate or cuspidate or upper angle acute, 8-15 inches long, 7 to 12 inches wide, peiole 1 to 13 inches long geniculate above sheathing at base only. Peduncles several 3 inches long rather slender. Spathe long persistent, thick beaked 1-3 inches long ½-1½ inch wide, spreading. Spadix 1-1½ inch long, nude portion ½ inch long. Perianth none. Stamens 6, filaments short triangular, anthers 2 celled cells divaricate at base. Ovary top flat, stigma discoid, 2 celled. Fruit ¼ inch across white 2 celled with a seed in each cell. *Anadendrum medium,* Schott. Bonplandia. V. 45. Prodr. 392. *Scindapsus medius,* Zoll. and Mor. Syst. Verz. n. 82. Miq. Fl. Ind. Bat. 186. *Epipremnum medium,* Engl. Arac. 250. *Pothos pinnatus,* Wall. Cat. 4438.

Singapore (Wallich 4438), Bukit Timah, Garden Jungle (Ridley 6373); Johor: Gunong Panti; Sungei Ujong; Selangor: Bukit Kudah (Ridley); Penang: Batu Feringhi (Curtis 1923); Perak (Scortechini, King's Collector). Distrib. Java, Philippines, Borneo. Native name "Sakat Gajah." The form with falcate distichous nearly sessile leaves, is the *Pothos celaticaulis* of Gardens.

Excluded Species.

R. caudata, Schott. Bonplandia. V. 45. *Epipremnum mirabile,* Schott. Aroid. t. 79. Penang (Roxburg). This is probably an error of locality. It has not since been found in the peninsula, and Roxburgh's plat was a cultivated one in Calcutta Gardens probably wrong labelled.

16. Lasia, Lour.

A large marsh plant, with a stout stem. Leaves long petiole pinnatifid or entire hastate, petiole midrib and nerves beneath thorny. Peduncle tall thorny, spathe very long narrow opening only at the base, deciduous. Spadix short cylindric. Flowers hermaphrodite. Sepals 4-6 ovate wedge-shaped. Stamens 4-6 filaments broad. Anther lobes broad blunt shorter than the filament. Pistil conic, 1 celled 1 ovuled. Style stout, stigma discoid. Berry subglobose ribbed and warted. Seed compressed.

Species 1. India, Cochin China, China, Malaya.

L. aculeata, Lour. Fl. Cochin-Ch. 81. Stem 2-3 feet long ½ inch through. Leaf blade deeply cleft into 4 to 8 pairs lanceolate acuminate lobes 1½ inch across, basal lobes deflexed trifid dark green 12 inches long, petiole 1-4 feet long very thorny. Peduncle about 1 fot long nearly ½ inch through green. Spathe cylindric acuminate 14 inches long brown purplish, thick soft. Spadix 1¼ inch long yellow. Sepals pale green with a broad subtriangular top. Fruiting spadix 3 inches long thick dark green. Berry ½ inch long. *L. heterophylla,* Schott. Melet. I. 21. *L. zollingeri. L. Jenkinsii. L. Hermanni,* Schott. Bonplandia V. 1857, 125. *L. desciscens,* Schott. Ann. Mus. Lugd. Bat. I. 127. *L. Roxburghii,* Griff. Itin. Notes III. 155. *L. spinosa,* Flud. Theo. Enum. 336. Engl. Monogr. Arac. 273. *Photos Lasia,* Roxb. Fl. Ind. I. 438. *P. heterophylla,* Roxb. l.c. 437. Wt. Ic. 777. *Dracontium spinosum,* L. sp. Pl. 967.

Singapore: Chua Chu Kang, Jurong; Johor: Sungei Tebrau; Selangor: Kuala Lumpur Caves (Ridley); Pahang: Pekan (Ridley); Perak: Simpang (Wray 2253). In mud usually tidal swamps. Native names "Gli-Gli" and "Bekil."

17. Podolasia, Ne. Br.

Stem creeping. Leaves hastate or sagittate or 3 lobed long petioled thorny. Spathe linear or ovate expanded. Spadix ½ as long, base nude cylindric obtuse. Perianth segments 4 to 6. Stamens as many opposite. Ovary ovoid oblong truncate at the top 1 celled 1 ovule basal. Drupe globose 1 seeded red.

P. stipitata, N. E. Br. Gard. Chron. 1882. II. 70. Terrestrial stem short and thick an inch long. Leaves sagittate or ovate cordate, or 3 lobed lobes linear lanceolate acute or broad, 10 to 20 inches long

1½ to 2 inches wide, dark olive green nerves prominent, petiole 21 inches long or shorter sheathing at the base thorny. Peduncle 17 to 27 inches long, thorny at base. Spathe linear or ovate acuminate 5 inches long, ½ to 1 inch wide purple. Spadix nude portion ½-1 inch long, above cylindric obtuse 2 inches long in flowers, lower part white apex purple. Fruiting spadix 6 inches long. Drupe globose red ¼ inch long. Seed globose. Hook. fil. Fl. Brit. Ind. VI. 550.

Johor: Gunong Panti and Gunong Pulai (Ridley); Perak (Scortechini), Larut Hills (Ridley), Relau Tujoh (Wray 1842); Dindings: Telok Sera (Ridley 7247). Local and not common in woods. Distrib. Sumatra, Borneo.

18. Cyrtosperma, Griff.

Large aquatics. Leaves hastate, long petioled. Peduncle long erect. Spathe persistent ovate expanded. Spadix short dense flowered, base nude or not. Flowers hermaphrodite. Sepals 4 to 8 truncate apex incurved. Stamens 4-8 filaments short. Anthers obovate oblong. Ovary 1 celled. Stigma pulvinate ovules 1 or more, semianatropous, pendulous with long funicles. Berries crowded fleshy, seed compressed crested. Albumen scanty. Embryo horse-shoe shaped.

Species 10. African, Malaya, South America.

C. lasioides, Griff. Itin. Not. III. 149. Stem short and very stout. Leaves hastate sagittate 20 inches wide and as long or less; nerved stout curved, margin of lobes and midrib thorny, petiole 4 to 5 feet tall 1 inch through at the base thorny. Peduncle thorny 2-3 feet long. Spathe ovate acuminate stiff 4 inches long 1¼ inch wide, outside brown purple with green lines shining, inside cream colour. Spadix base ½ inch long nude, cylindric blunt 3 inches long pink. Sepals spathulate truncate flat topped pink. Stamens filament broad oblong thin flat. Anthers obovate elliptic ocreous opening by longitudinal slits. Ovary base narrow, dilate upwards. Style short and broad. Drupe obcuneate green apex purple. Seed reniform with 4 crests of blunt processes. Griff. Notul. III. 150. Ic. Pl. As. t. 169. Schott. Gen. Ar. t. 84. Prod. 403. Engler. Arac. 270. Icones. 89. Hook. fil. Fl. Brit. Ind. VI. 551.

Singapore (Gaudichaud, Wallich 4447), Tanglin (Ridley 4605); Johor: Sungei Tebrau; Malacca (Griffith), Ayer Panas (Derry 298); Pahang: Kuala Mahang (Ridley); Sungei Ujong; Perak: Chenderian (King's Coll. 5654), Goping (King's Coll. 4357); Penang: Batu Kurau (Curtis 2988). Distrib. Borneo. Common in swamps and marshes in low ground. Native name "Gligli." It varies much in size according to age.

19. Pothos, Linn.

Climbing herbs, branched and slender. Leaves distichous with a sheathing petiole, often widely winged, coriaceous oblong or lanceolate.

Spadix peduncle slender or globose. Spathe usually narrow or deflexed, or broad. Flowers numerous densely crowded or whorled. Sepals 6 tips incurved. Stamens 6, filaments flat. Anther cells ellipsoid. Ovary 3 celled. Stigma small top of ovary flat. Ovules 1 in the inner angles of each cell anatropous. Berries 1-3 seeded, fleshy. Seed exalbuminous.

Species 20. Madagascar, Tropical Asia, Australia and Polynesia.

Flower spike globose.
- Stipes of spadix short $\frac{1}{8}$ inch .. .. 1. *P. scandens.*
- Stipes of spadix long $\frac{1}{2}$ inch .. .. 2. *P. macrocephalus.*

Flower spike cylindric.
- Flowers whorled .. .. 3. *P. latifolius.*
- Flowers not whorled dense.
  - Spathe linear narrow.
  - Sepals tips narrow.
    - Leaves .. .. 4. *P. Barberianus.*
    - Leaves broadly elliptic .. .. .. 5. *P. ellipticus.*
    - Sepals broadly triangular at tip .. 6. *P. inaequalis.*
  - Spathe oblong boat-shaped .. .. 7. *P. lancefolius.*
  - Spathe ovate lanceolate 4 inches long .. 8. *P. Kingii.*
  - Spathe ovate acuminate .. .. 9. *P. grandispatha.*

1. P. SCANDENS, L. Sp. Pl. 968. Stem slender 6 to 10 feet long. Leaves lanceolate acuminate to ovate acuminate 3 inches long by $\frac{3}{16}$ to $1\frac{1}{2}$ inch wide, petiole obcuneate or spear-shaped 1 to 3 inches long, by $\frac{1}{4}$ to $\frac{1}{2}$ wide at the top. Peduncles axillary $\frac{1}{4}$ inch long with several ovate acute bracts. Spathe ovate cuspidate boat-shaped $\frac{1}{8}$ inch long green or purple. Spadix with a stipes $\frac{1}{8}$ inch long, head of flowers globose $\frac{1}{8}$ inch through. Bot. Reg. t. 133. Hook. Ic. Pl. 175. Schott. Meletem. 1, 21. Aroid. I. 22, t. 33. Prodr. 563. Roxb. Fl. Ind. II. 457. Kunth. Enum. III. 65. Engl. Arac. 84. (Excl. var. B). Hook. fil. Fl. Brit. Ind. VI. 551. *P. exiguiflorus,* Schott. Aroid. I. 21. t. 41. Prodr. 561. *P. fallax,* Schott. Prodr. 560. *P. decipiens,* Schott. Bonpl. 1859, p. 165. Prodr. 562. *P. Roxburghii,* De Vr. Plant Jungh. I. 103. var. A. petiole narrow long, blade lanceolate.

Selangor: Kuala Lumpur Caves (Ridley 8167), (Curtis 2394).

var. *B. cognatus,* Engler. l.c. *P. cognatus,* Schott. Aroid. I. 22. t. 48. Prodr. 562. Petiole broadly cuneate, blade ovate to oblong elliptic.

Perak: Kuala Kangsa (Ridley 2953); Selama (Scortechini), Kuala Dipang (King's Coll. 8274); Penang Waterfall (Curtis 2853). Distrib. India, Siam, Borneo, Java, Sumatra. Native name "Juloh

Juloh." The leaves ground to powder are applied to the body in small-pox, the stems cup up with camphor or smoked like tobacco for asthma.

2. P. MACROCEPHALUS, Scortechini, in Flora Brit. Ind. 553. A long slender creeper 60 to 80 feet long stouter than the preceding species. Leaves dark green glossy, blade lanceolate to linear, lanceolate 1½ to 3 inches long ⅜ to ½ inch wide, petiole 2 to 3 inches long linear. Peduncle 1-1¾ inch long, decurved. Bracts at base several ovate ⅛ inch long and longer. Spathe ovate cuspidate ½ inch long and over ½ inch wide dark greenish black or pale green. Stipe ½ inch long. Head globose or pyriform yellow ¼ inch long. Sepals oblong truncate. Stamens 6. Ovary top rounded flat, stigma very small punctiform slightly elevated. Fruit (young) oblong bluntly 6 angled top truncate.

Perak (Scortechini), Goping (King's Collector 4327, 6029); Waterloo (Curtis 2895). Endemic.

3. P. LATIFOLIUS, Hook. fil. Fl. Brit. Ind. VI. 554. Stems woody moderately stout 10 to 15 or more feet long. Leaves broadly elliptic or elliptic lanceolate, cuspidate base rounded or cuneate 4 to 8 inches long 1½-2¼ inch wide intramarginal vein near the edge, lateral veins slender close, veinlets reticulate, petiole 2 to 4 inches long winged to the short ¼ inch knee. Peduncle ½ to 2 inches long deflexed or sigmoid. Spathe linear 1-1½ inch long pale green. Spadix 3 to 6 inches long stipitate. Flowers in whorls close or rather distant, brown. Sepals ovate obtuse. Stamens 6, filaments broad a little longer than the pistil. Top of pistil rounded stigma small punctate. Drupe oblong ¼-⅜ inch long, red. *P. Maingayii,* Hook. fil. l.c. *P. Curtisii,* Hook. fil. l.c. *P. Kunstleri,* Hook. fil. l.c.

Singapore: Bukit Mandai (Ridley 6535), Kranji (5108); Malacca (Maingay); Selangor: Kuala Lumpur, Pahang Track (Ridley); Dindings: Lumut (Ridley 7248); Perak: Larut Hills 8-2000 feet elevation (Wray 3903), (King's Coll. 3887, 8493, 2754), (Curtis 2987); Sunkei (King's Coll. 3012); Gunong Keledang (Ridley 9696); Penang: Batu Feringhi (Curtis 808). Distrib. Malaya. "Akar Lidah Badak." Climbing on trees.

I have examined all the types of the above species, and am quite unable to separate them. The leaves vary a good deal in size in different parts of the plant. The spadix seems to lengthen as it developes so that the flowers appear to be more distant in fully developed spadices than in younger ones.

4. P. BARBERIANUS, Schott. Aroid. 24. t. 53. Prodr. 573. Stems slender rather stiff. Leaves lanceolate cuspidate, or oblong ovate lanceolate acuminate base rounded 5 inches long by one wide thinly

coriaceous finely reticulate with an intramarginal vein and prominent keel (when dry) petiole 2 inches long $\frac{1}{8}$-$\frac{1}{4}$ inch across, sheathing up to the knee. Peduncle over an inch long with numerous sheaths at the base, 2 or 3 of which are nearly lanceolate acuminate an inch long $\frac{3}{16}$ inch wide. Spadix sessile slender cylindric densely flowered 1 inch long, less than $\frac{1}{8}$ inch through. Perianth lobes oblong truncate pubescent. Stamens 6. Pistils top rounded stigma small discoid. Drupe oblong $\frac{1}{4}$ inch long narrowed upwards apex truncate. Engler. Arac. 90. Hook. fil. Fl. Brit. Ind. VI. 558.

Perak: Larut Hills (Curtis), Briah (Wray 4212), (King's Coll. 3175); Dindings: Lumut (Ridley 10285). Distrib. Sumatra, Borneo.

var. *Wallichii*. *P. Wallichii*, Hook. fil. l.c. More slender with narrow leaf sheaths, spadix more distinctly stipitate, and style more developed.

Perak (Porter, Wall. Coll. 4439 B *P. tenera*). Perak (Scortechini). I think this is only a weak form of *P. Barberianus* but I have seen but little of it.

5. P. ELLIPTICUS, Ridl. Journ. Roy. As. Soc. Vol. XLI. p. 48. Stem fairly stout. Leaves elliptic cuspidate 5 inches long $2\frac{1}{2}$ inch wide, keel stout base rounded, inner intramarginal vein some way from the edge, outer one close to the edge, parallel nerves fine close leaves pale green when dry, petiole 3 inches long sheathing rather broadly to the knee, knee $\frac{1}{4}$ inch long. Peduncle stout 2 inches long or less, deflexed. Spathe linear oblong. Spadix nearly sessile $\frac{3}{4}$ to 1 inch long thick cylindric dense flowered. Flowers fairly large. Sepals oblong with a broad inflexed tip. Stigma discoid shortly elevated. Fruit oblong $\frac{1}{2}$ inch long.

Pahang on the Pahang river, Kuala Tembeling and Pulau Tawar (Ridley). Endemic. My specimens of the plant are nearly out of flower and the spathes are fallen, but it seems quite distinct from any described species.

6. P. INAEQUALIS, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XLI. p. 47. Stem rather slender much branched. Leaves elliptic oblanceolate with a long point base cuneate, intramarginal vein often far from the edge undulate, with another very conspicuous one very close to the edge, main-nerves often large and remote, 4 to 7 inches long, 1 to 2 inches wide, petiole $\frac{1}{2}$ to 1 inch long sheathing to the thick knee which is half an inch long. Bracts several upper one sheathing $\frac{1}{2}$ inch long, lower ones small. Peduncle $1\frac{1}{2}$ to 2 inches long fairly stout curved. Spathe not seen. Spadix an inch long cylindric dense flowered. Sepals cuneate with a broad flat triangular top. Pistils top broad rounded.

Perak: Pulau Tawar (Ridley 2391). Endemic.

7. P. LANCIFOLIUS, Hook. fil. Fl. Brit. Ind. VI. 554. A large climber, rather slender branches woody, conspicuously jointed internodes ½ inch long. Leaves lanceolate long acuminate drying grey above reddish beneath, nerves reticulate slender, intramarginal nerves inconspicuous 4 to 7 inches long, ½ to ¾ inch wide, base cuneate, petiole 2 to 3 inches long strongly winged up to the knee which is ⅛ inch long. Bracts absent. Peduncle rather stout 1 inch long. Spathe oblong cuspidate 1-1½ inch long and very broad lurid purple. Spadix thick curved blunt ¾-1½ inch long cylindric ⅛ inch through. Sepals 6. Stamens 6, filaments linear oblong. Stigma minute. Drupe ¼ inch long.

Perak (Scortechini 576) no locality given. Rare. Endemic.

8. P. KINGII, Hook. fil. Fl. Brit. Ind. VI. 553. Stem 20 to 30 feet long stout. Leaves oblong cuspidate or oblong lanceolate, caudate acuminate base narrowed rounded coriaceous often inaequilateral, 6 to 10 inches long, 3 to 4 inches wide, petiole 3 to 4 inches long margins membranous at length fibrous, tip 2 auricled knee ¼ inch long. Bracts 1½ to 2 inches long. Spathe ovate lanceolate 4 to 6 inches long dark purple inside pale without. Spadix cylindric dense half as long, ovary oblong, style very short, stigma penicillate.

Perak (Scortechini 1450), Larut Hills 2-3000 feet alt. (King's Collector 2723). Rare. Endemic.

9. P. GRANDISPATHA, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XLI. p. 48. Stem less than ¼ inch thick. Leaves lanceolate cuspidate 6 to 8 inches long 2 to 2½ inch wide, cusp half an inch long, base narrowed blunt, petiole 2 inches long sheathing rather broadly to the very short ⅛ inch knee, sheath eventually breaking up into fibres. Peduncle slender 2 inches long. Spathe broadly ovate acuminate apparently purple narrowed at the base 2½ inches long, 1 inch wide. Spadix very slender 1 inch long, sessile. Flowers very small. Sepals oblong truncate, style distinct with a small discoid stigma.

Penang: West Hill (Curtis). This plant resembles *P. brevistylus,* Engler Malesia I. p. 264. T. XVI. but is remakable for the great size of the spathe. Endemic.

20. ACORUS, Linn.

Marsh herbs with an aromatic rootstock. Leaves distichous, erect ensiform. Peduncle leaf-like. Spathe ensiform continuous with the peduncle. Spadix sessile cylindric dense flowered. Sepals 6 orbicular tips incurved. Stamens 6, filaments linear flat. Anther reniform ovary conic 2-3 celled. Stigma minute ovules many. Berries few-seeded. Seeds oblong.

Species 2. North temperate zone.

A. CALAMUS, l.sp. Pl. 324. Leaves 3 to 6 feet tall, $\frac{3}{4}$ to $1\frac{1}{2}$ inch wide. Peduncle 19 inches. Spathe 6 to 30 inches long acuminate. Spadix green 2-4 inches long cylindric obtuse. Roxb. Fl. Brit. Ind. II. 169. Don. Griff. Notul. As. III. 157. Ic. Pl. As. t. 162. Engler Arac. 217. Hook. fil. Fl. Brit. Ind. VI. 555. *A. Griffithii* and *A. nilaghirensis,* Schott. Oestr. Bot. Zeitschr. (1858) 357; (1859) 101. Prodr. 579 and 580. *A. Belangeri,* Schott. Ann. Mus. Lugd. Bat. I. 284. Cultivated and in old cultivated ground all over the peninsula but seldom flowering. Native name "Deringu" and "Jeringu," the rhizome is extensively used in native medicine and magic. Distribution nearly the whole world.

XXII. LEMNACEAE.

Minute or very small flowering plants, scale-like green, rootless or bearing one or more slender roots from the under side of the frond. Flowers minute 1 to 3 naked or in a spathe. Perianth none. Stamens 1 or 2 with 1 or 2 celled anthers, ovary flask-shaped 1 celled. Seeds one or more.

Fronds with one or more roots. Flowers lateral .. 1. *Lemna.*
Fronds minute rootless. Flowers on the upper surface .. .. 2. *Wolffia.*

1. LEMNA, L.

Fronds with one or more roots from the under surface. Flowers one or more in a spathe on the edge of the frond.

Species about ; whole world.

Roots solitary.
Frond elliptic asymmetrical .. .. 1. *L. paucicostata.*
Frond ovoid acuminate .. .. .. 2. *L. tenera.*
Roots several. Frond orbicular .. 3. *L. polyrrhiza.*

1. L. PAUCICOSTATA, Hegelmaier Lemnae 139. t. 8. Roots solitary, frond asymmetrical elliptic or ovate $\frac{1}{8}$ inch long. Spathe truncate. Stamens 1-2 with 3 cells. Pistil very short flask-shaped truncate. Ovules solitary. Hook. fil. Fl. Brit. Ind. VI. 556. L. minor, Griff. Notulae III. 216.

Singapore Garden Lake (Ridley 7), Ang Mo Kio; Pahang: Pekan (Ridley); Malacca well in Residency Garden; Province Wellesley: Permatang Bertam (Ridley 7011). Distrib. Tropics generally. The commonest species here, abundant in ditches.

2. L. TENERA, Kurz. Journ. As. Soc. Beng. XL. 1871. II. 78. Root solitary. Frond thin ovate acuminate or lanceolate, with one or two younger ones budding off from the side, $\frac{1}{4}$ inch long.

Singapore: Galang (Ridley 10374), Telok Kurau (Ridley 10778); Dindings: Bruas (7249). Distrib. Pegu.

3. L. POLYRRHIZA, Linn. Sp. Pl. 970. Roots several ½ inch long, frond orbicular or ovate rather thick ⅛ inch long green above purple beneath. Spathe 2 lipped. Stamens 2. Ovules 1-2. Rchb. Ic. Pl. Germ. VII. t. 15. Kurz. Journ. Linn. Soc. IX. 267. Hook. fil. Fl. Brit. Ind. VI. 557. *L. orbiculata,* Roxb. Fl. Ind. III. 565. *L. major,* Griff. Notul. III. 216. Ic. Pl. As. t. 264. *Spirodela polyrrhiza,* Schleid. Linnea XIII. 392. Hegelm. Lemnac. 151. t. 13-15.

Singapore: Ditches in Alexandra Road (Ridley). Distrib. Whole world.

2. WOLFFIA, Horkel.

Fronds rootless minute. Flowers on the upper surface. Spathe none. Anthers sessile 1 celled. Style short, stigma depressed. Ovules 1 erect.

Species 2. Whole world.

W. ARRHIZA, Winm. Fl. Schlesw. 140. Fronds globose green microscopic. *W. Michelii,* Schleid. Beitrag. Bot. 233. *Lemna arrhiza,* Linn. Mantiss 294. *L. globose,* Roxb. Fl. Ind. III. 565. *Grantia globose,* Griff. Notul. III. 229. Ic. Pl. As. t. 267. f. 2.

Singapore: Tanglin (Ridley); Malacca: Well in Residency Garden. Occurs mixed often with *Lemna paucicostata.* It is not very common but when it occurs it is very abundant.

XXIII. ERIOCAULONEAE.

Herbs, (shrubs and trees in South America) with fibrous roots, stem usually very short. Leaves narrow basal. Flowers minute unisexual in a head on the apex of a slender scape. Bracts forming an involucre at the base. Male flowers 2-3 free of connate scales, petals 2-3 or often abortive on the top of an elongate stipes. Stamens 6 or less. Anthers two-celled. Female flowers pedicelled or not. Sepals 2-3, narrow. Petals 3 rarely fewer usually ciliate. Stigmas slender 2-3, style short. Ovary 3 (rarely 2-celled) ovules solitary in the cells. Capsule trilobed thin-walled loculicidal. Seeds very minute papillose.

Species 6-700, the greater number tropical and most in South America.

Scapes a foot tall, heads columnar obtuse .. *E. sexangulare.*

Scapes short not more than 4 inches tall.

Heads hemispheric involucral bracts ovate short .. .. *E. truncatum.*

Heads small, involucal bracts acute longer than flowers, spreading .. .. .. *E. xeranthemum.*

E. SEXANGULARE, Linn. Sp. Pl. 87. Rootstock stout. Leaves long linear obtuse grassy dark green 3 to 13 inches long ⅛ to ¼ inch wide. Scapes numerous slender terete dark green with white ribs, 12 to 18 inches long. Heads globose or columnar hard, hoary base truncate or intruded ¼ inch long. Involucral bracts ovate obtuse. Receptacle glabrous conic or hairy. Floral bracts spathulate, male flowers sepals usually connate boat-shaped keeled. Petals very small tipped with a tuft of hairs. Female flowers very shortly pedicelled or sessile. Sepals boat-shaped keeled. Petals filiform with a tuft of white hairs. Capsule flat broadly winged. Seeds elliptic ribbed and papillose. Hook. fil. Fl. Brit. Ind. VI. 580. *E. Wallichianum,* Mart. in Wall. Pl. As. Rar. III. 26. t. 249. Kunth. Enum. III. 564. Steud. Syn. Cyp. 271. Koern. Linnaea XXVII. 687. Trimen. Journ. Linn. Soc. XXIV. 136. *E. quadrangulare,* Lour. fl. Cochin 60.

Singapore: Reservoir (Ridley 5882) and whole Island; Johor: Tana Merah; Malacca (Griffiths), Bukit Sabukor (Derry 277), Ayer Panas (Goodenough 1651); Sungei Ujong: Bukit Sulu; Pahang: Pekan (Ridley); Penang Hill (Ridley 9335). Distrib. Madagascar, Trop. Asia.

A very common plant in open damp spots. The var. *longifolium,* Hook. fil. l.c. *E. longifolium,* Kunth. Enum. III. 567 I take to be a form growing in long swamp grass occasionally to be met with. Forms with the heads containing numerous bulbils occur in very wet spots, e.g., Sungei Janang, Johor (Kelsall 4097). "Rumput Suasa," "Rumput Kumpui Bunang."

E. TRUNCATUM, Ham. in Mart. Wall. Pl. As. Rariore III. 29. A small tufted plant with fine roots. Leaves linear acute, light green 1 to 2 inches long ⅛ inch wide. Scapes 1-4 inches tall subterete, sheath at base tubular closely appressed 1 inch long or less. Heads greyish white ⅛ inch across hemispheric. Involucral bracts ovate spreading margins slightly lacerate. Receptacle nearly flat glabrous. Floral bracts cuneate denticulate scarious. Male flowers free or coherent. Petals very minute. Stamens 6 or less. Anthers black. Female flowers pedicelled. Sepals 3 narrow linear. Petals 3 linear ciliate ovary with petals stipitate subglobose. Style short linear. Stigmas 3. Seeds elliptic ribbed. Kunth. Enum. III. 555. Steud. Syn. Pl. Cyp. II. 270. Koern. Linnaea XXVII. 631. Hook. fil. Fl. Brit. Ind. VI. 578. *Leucocephala spathacea,* Roxb. Fl. Ind. III. 613.

Singapore: Tanglin, Bukit Mandai (Ridley 3920); Malacca (Griffith 5567), Bukit Sabukor, Ayer Panas (1654); Pahang: Kwala Pahang (Ridley 1175); Perak: Dindings. Lumut: Penang Hill

(Ridley 9392); Lankawi: Kwah (Ridley 8304). Distrib. India, China, Malay Islands.

"Rumput Durian." A common little weed in damp sandy paths, etc. Hooker l.c.c. makes this plant a variety var. *Malaccense* on its broader floral bracts which are very variable, the flowers of both sexes sessile, but they are more usually stipitate, petals broader and seeds larger. It is a variable plant however, and I take it to be practically the same as the Indian one.

E. XERANTHEMUM, Mart. Wall. Pl. As. Rar. III. 29. Small plant 2 to 3 inches tall. Leaves linear acute rather flaccid 1 inch long $\frac{1}{16}$ to $\frac{1}{8}$ inch wide. Scapes 2-3 inches long strongly 3 ribbed and twisted, sheathing leaf rather loose $\frac{1}{3}$ length of the scape. Heads small with 7 or 8 lanceolate acute strongly toothed involucral bracts much over topping the flowers. Inner bracts lanceolate acuminate toothed. Male flowers. Sepals obcuneate black with white processes. Petals 3 spathulate tipped black. Fruit 3 lobed 3 seeded, seeds rather large elliptic yellow obscurely dotted. Kunth. Enum. III. 555. Steud. Syn. Pl. Cyp. 270. Hook. fil. Fl. Brit. Ind. VI. 584. *E. pygmaeum,* Dalz. Kew Journ. III. (1851). *E. xeranthemoides,* Heurck. and Mill. Obs. Bot. 103.

Penang: Waterfall (Curtis 3674). Distrib. India and Africa.

A remarkable little plant, the bracts much longer than the head of flowers which are very few in number seated on a flat receptacle.

XXIV. CYPERACEAE.

Herbs grass-like, with solid more or less triquetrous stems. Leaves linear or oblong sheathing, with tubular sheaths, rarely reduced to sheaths only. Flowers 1-2 sexual small or minute solitary in the axils of glumes, arranged in spikes. Perianth none, or of hypogynous bristles or scales. Stamens 1 to 3. Anthers linear basifixed, filaments long or short. Ovary 1 celled, 1 ovuled. Style slender 2-3 cleft, with slender branches. Ovule basal erect anatropous. Fruit a compressed, bi-convex, plano-convex or trigonous nut. Embryo minute inside the usually floury abumen.

Species about 3,000, distributed over the whole world.

In working up this order I am much indebted to Mr. C. B. Clarke for identifications of most of the specimens collected in the Malay Peninsula, and I have also made much use of his works on the order, especially the Cyperaceae of the Flora of British India and his papers in the Journal of the Linnean Society.

§ A. CYPEREAE. Spikelets of many or few glumes, lowest 1-2 or more empty, middle

ones one to many bisexual, uppermost, male or empty or aborted.

1. Eucypereae. Glumes few or many, distichous.

Hypogynous bristles none.

Style bifid.

Bisexual flowers 1-2 .. .. 1. *Kyllinga.*

Bisexual flowers numerous .. 2. *Pycreus.*

Style trifid.

Rachilla of spikelet persistent after the fall of the glumes .. .. 3. *Cyperus.*

Rachilla disarticulating above the two lowest empty glumes .. 4. *Mariscus.*

2. Scirpeae. Flowering glumes spirally arranged.

Hypogynous bristles or scales of often present.

Style base constricted or articulate above the top of the nut. Leafless with a single terminal spikelet.

Hypogynous bristles rarely absent .. .. 5. *Eleocharis.*

Leaves present (rarely absent). Spikelets usually several.

Hypognyous bristles 0.

Style base persistent or completely deciduous .. .. 6. *Fimbristylis.*

Style base deciduous but leaving a small knob on the nut .. .. .. 7. *Bulbostylis.*

Style base not articulate, passing gradually into the nut.

Hypogynous bristles 0-6 linear.

Stems leafy or not .. .. .. 8. *Scirpus.*

Hypogynous scales 6 or 3 broadly obovate or spathulate. Stems leafy .. .. .. 9. *Fuirena.*

Hypogynous scales 2, thin elliptic boat-shaped enclosing the nut .. .. .. 10. *Lipocarpha.*

3. Rhynchosporeae. Glumes not distichous. Basal empty ones several, bisexual ones 1 or 2. Uppermost male or empty several.

Hypogynous bristles linear or absent.

Spikelets panicled.

Style bifid. Style base thickened conic persistent .. .. 11. *Rynchospora.*

Style 2-3-fid. Style base conic deciduous .. .. 12. *Actinoschoenus.*

Style trifid.

Three or more lowest empty 2-3 next fertile .. .. .. 13. *Schoenus.*

Lowest flower in each spikelet fertile .. .. 14. *Cladium.*

Uppermost flower fertile.

Hypogynous scales long .. .. .. 15. *Lepidosperma.*

Hypogynous scales 0 .. .. 16. *Gahnia.*

Spikelets in dense cylindric spikes.

Uppermost glume fertile only .. 17. *Remirea.*

§ B. Hypolytreae. Spikelets of one glume like bract, two thin boat-shaped keeled, glumes containing one stamen each and 4 to 9 narrow hyaline glumes (squamellae absent in Hypolytrum) 1 or more containing a stamen. Female flower terminal.

Spikes in a corymbose panicle or few.

Style bifid. Squamellae 2 monandrous 18. *Hypolytrum.*

Style trifid. Squamellae 6, 2-3 monandrous .. .. 19. *Thoracostachyum.*

Spikes solitary or many crowded in a head .. .. 20. *Mapania.*

Spikes in a short panicle .. .. 21. *Scirpodendron.*

Spikes solitary lateral on leafless stems 22. *Lepironia.*

§ C. Sclerieae. Spikelets unisexual or with one or more male flowers above a female one. Hypogynous bristles none. Nut stipitate with a disc at the base, bony smooth, warted or tessellate.

Stems leafy .. .. 23. *Scleria.*

§ D. Cariceae. Spikelets uni- or bisexual. Nut enclosed in an utricle .. 24. *Carex.*

§ A. Cypereae.

1. Kyllinga, Rottb.

Rhizome long or short. Stems erect leafy below leaves narrow. Inflorescence 1-3 sessile capitate spikes, with 3 or 4 leafy bracts below. Spikes ovoid or cylindric of numerous small compressed spikelets. Glumes 4-5 distichous, 2 lowest glumes empty, glume 3 bisexual, glume 4 empty, or male. Stamens 1-3. Anthers linear oblong. Style linear branches 2. Nut compressed laterally.

Species 33. Whole world, except Europe.

Fertile glume (3rd) winged in the upper half	1. *K. monocephala.*
Fertile glume not winged.	
Rhizome elongate.	
Spikes ovoid green	2. *K. brevifolia.*
Rhizomes thick and short.	
Leaves very short. Head solitary green ovoid	3. *K. melanosperma.*
Leaves moderately long. Heads 1-3 white cylindric	4. *K. cylindrica.*

1. K. monocephala, Rottb. Descr. and Ic. 13. t. 4. f. 4. Rhizome usually short, stems close 6 to 12 inches. Leaves linear acuminate 6-9 inches long ⅛ inch wide. Spikes 1-3 ovoid white ¼ inch through. Bracts 3-4 linear, like the leaves, longest 8 or 9 inches. Spikelets ⅛ inch long, lowest glume narrow linear, 2nd ovate, 3rd flattened ovate acuminate ribbed crested at the middle, crest toothed, white with a green lateral stripe. Glume 4 empty ovate acuminate not crested, finely toothed on the keel. Nut elliptic ovoid flattened. Roxb. Fl. Ind. I. 180. Nees. Wight. Contrib. 91 partly. Miq. Fl. Ind. Bat. III. 291. Boeck. Linnaea. XXXV. 427. Clarke Fl. Brit. Ind. VI. 588. Trimen. Flor. Cyl. V. p. 44. *K. triceps,* Linn. f. Supp. 104 (partly not Rottb.). *K. sororia,* Miq. Fl. Ind. Bat. III. 293 (partly not of Kunth). *K. gracilis,* Zoll. Verz. Ind. Arch. II. 63 not Kunth). *K. mindorensis,* Steud. Syn. Pl. Cyp. 67. *Scirpus cephalotes,* Jacq. Hort. Vindob. t. 97. Whole Peninsula, in grassy spots, very abundant.

Singapore (Wallich 3443 G); Johor; Selangor: Dusun Tua (Ridley 7772), Kuala Lumpur (8160); Pahang; Malacca; Perak; Penang. Native name "Rumput Butong."

2. K. brevifolia, Rottb. Descr. and Ic. 13. t. 4. f. 3. Rhizome 3-4 inches long or more. Stems not crowded, or close 4 to 12 inches tall. Leaves 6-8 inches long, narrow. Spikes 1-3 ovoid green ¼ inch long lanceolate. Lowest glumes very small. Glume 3 lanceolate mucronate strongly ribbed, keel green toothed. Glume 4 longer and narrower, nut ovate yellow. Nees. Wight. Contrib. 91 (partly) Boeck.

Linnaea XXXV. 424. Clarke Fl. Brit. Ind. VI. 588. Trimen Fl. Cyl. V. 45. *K. intermedia,* Br. Prodr. 219. *K. cruciata,* Nees. Linnaea IX. 286. *K. monocephala,* Thunb. Fl. Jap. 35. Miq. Ann. Mus. Lugd. Bat. II. 142 (not Rottb.). *K. sororia,* Kunth. Enum. II. 131. Miq. Fl. Ind. Bat. III. 293 partly. *K. gracilis,* Kth. l.c. Miq. l.c. 292. *K. fuscata,* Miq. l.c. 294. *K. aurata* var. *Hohenhackeri,* Boeck. l.c. 423. *K. triceps,* Thunb. Fl. Jap. 35 (not Rottb.). *Schoenus coloratus,* L. Sp. Pl. Ed. 2. 64. Whole Peninsula, very common in grassy spots.

Singapore: Bajau (Ridley 205), Seletar (1638), Tanglin (9), (Kurz. 2997); Pahang, Malacca, Selangor, Province Wellesley (King); Penang: Government Hill (Curtis 1808). Distrib. All warm parts of the world except Europe. Native name "Rumput Tuki." The rhizomes used for poulticing sore legs.

3. K. MELANOSPERMA, Nees. Wight. Contrib. 91. Rhizome short and thick. Stems 15 by 18 inches long, triquetrous above. Leaves few and short 1-4 inches long, $\frac{1}{5}$ inch wide. Head solitary ovoid green $\frac{1}{4}$ inch long. Bracts $\frac{3}{4}$ to 4 inches long. Spikes $\frac{1}{8}$ inch long narrow. Fertile glume ovate mucronate, keel green, with few short teeth ribs strong 3-4 on each side. Nut oblong ovoid black. Boeck. Linnaea. XXXV. 419. Clarke l.c. 388. Trimen. Fl. Ceyl. V. 45. *K. brevifolia,* Nees. l.c. 91. partly (not Rottb.). *K. fuscescens,* Boeck. l.c. 421. partly. *K. vaginata,* Zoll. Verz. Ind. Arch. II. 63. Miq. Fl. Ind. Bat. III. 290.

Singapore (Kurz), Tanglin, Thomson Road (Ridley). Rare in grassy spots. Distrib. Africa, Madagascar, S. India, Java.

4. K. CYLINDRICA, Nees. Wight. Contrib. 91. Rhizome very short. Leaves numerous tufted shorter than the stem 4-5 inches long $\frac{1}{8}$-$\frac{1}{6}$ inch wide. Stem 6 inches long. Head of 3 spikes, middle one cylindric $\frac{1}{4}$ inch long white, laterals shorter ovoid. Bracts 3 or 4 1-3 inches long. Spikelets narrow lanceolate, $\frac{1}{10}$ inch long. Fertile glume ovate submucronate keel hardly distinct with very few short teeth, ribs prominent. Nut yellow turning black. Boeck. Linnaea. XXXV. 415. Clarke l.c. 588. Trim. Fl. Ceyl. V. 44.

Singapore: Sandy lawn of the Raffles Institution (Hullett 2195). Very rare. I have never been able to find this plant anywhere else even in the neighbourhood. Distrib. India, Africa, Australia.

2. PYCREUS, Beauv.

Stems erect, leafy at the base only. Inflorescence umbellate or capitate, of oblong or linear flattened spikes, with a persistent racheola. Glumes distichous 2 lowest empty, upper ones bisexual, terminal one or two empty. Stems 1-3. Style with two branches, nut laterally compressed.

Species 50. All warm and temperate regions. Only differs from *Cyperus* in the 2 style branches and flattened nut.

Stem tall, leafy for ⅓ or more of its length.

Glumes ovate loosely imbricate red or pale .. .. 1. *P. sanguinolentus.*

Stems tall leafy at base only.

Glumes lanceolate yellow or brown .. 2. *P. polystachyus.*

Glumes oblong red .. .. .. 3. *P. puncticulatus.*

Small plant, annual.

Glumes ovate mucronate silvery .. .. 4. *P. nitens.*

1. P. SANGUINOLENTUS, Nees. Linnaea. IX. 283. Rhizome creeping. Stem 4 to 24 inches tall. Leaves distant on the stem for from ⅓ to ½ its length, sheaths 3 inches long or less, blade 6 to 9 inches, ⅛ inch wide. Umbel simple of about 5 branches with peduncles 2 inches long or less, and a central nearly sessile one or reduced to one head. Bracts 6 inches long or less spreading. Spikelets oblong or linear yellowish brown, or dark red ¼-½ inch long nearly ⅛ inch across. Glumes ovate obtuse keeled, loosely imbricate, with 3 nerves by the keel, sides reddish or edge dark red, nut half the length of the glume dark brown or black obovoid biconvex, puncticulate. Clarke Fl. Brit. Ind. VI. 590. *Cyperus sanguinolentus,* Vahl. Enum. II. 351. Nees. Wight. Contrib. 75. Trim. Ceyl. V. 20. *C. Eragrostis,* Vahl. Enum. II. 322. Kunth. Enum. II. 7. Moritz. Verz. Zoll. Pfl. 96. Boeck. Linn. XXXV. 443. Clarke Journ. Linn. Soc. XXI. 57, XXV. 80. *C. cruentus,* Roxb. Fl. Ind. I. 196 (not Rottb.). *C. pumilus,* Roxb. Desc. and Ic. 29. t. 9. fig. 4 (not Linn.). *C. atratus,* Steud. Zoll. Verz. Ind. Arch. II. 62. Pl. Cyp. 12. Miq. Fl. Ind. Bat. III. 259. *C. concolor,* Steud. Pl. Cyp. 6.

Pahang: Kuala Tembeling (Ridley 2144); Negri Sembilan: Kuala Pedas (Ridley 10069); Penang: Waterfall Gardens (Ridley). Distrib. Trop. Asia and Australia. Rather rare. Occurring in old rice fields and low wet open spots. The Penang and Pahang plants are light and coloured forms.

2. P. POLYSTACHYUS, Beauv. Fl. Owar. II. 48. t. 86. f. 2. Tufted plant, leaves taller or shorter than the stem weak. Stems 12-30 inches tall. Umbel simple with 4 or 5 peduncles 2 inches long or less or contracted into a head. Spikelets clustered erect ¼-½ inch linear, glumes numerous yellow or brownish often reddish lanceolate subacute closely imbricating. Nut obolng truncate black ⅓ the length of the glume. Clarke Fl. Brit. Ind. VI. 592. *C. polystachyus,* Br. Prodr. 214. Roxb. Fl. Ind. I. 193. Nees. Wight. Contrib. 75. Kunth. Enum. II. 13. Bekler. Linnaea. XXXV. 477. Trim. Fl. Ceyl. V. 20. *C. odoratus,* Linn. Sp. Pl. Col. I. 46. *C. teretifructus,*

Steud. Zoll. Verz. Ind. Arch. II. 62. Syn. Cyp. 3. Common over the whole peninsula in waste ground.

Singapore (Kurz 3013), Tanglin, etc. (Ridley 80); Pahang: Kuantan, Pekan (Ridley); Kelantan: Kamposa (Ridley 1416b); Penang: Government Hill, etc. (Curtis 1784, 1864).

var. *laxiflora,* Benth. Fl. Austral. VII. 261. Clarke l.c. 592. Tall and weak, with the branches of the umbel longer and narrower, usually redder. *C. paniculatus,* Rottb. Descr. and Ic. 40. *C. plenus,* Kunth. Enum. II. 12. Usually growing with the last but less common.

Singapore: Changi (Ridley 1750); Dindings: Lumut (Ridley); Malacca (Griffith 6205); Penang: Telok Bahang (Curtis 1862); Kedah: Yan (Ridley). Distribution. Whole of the warmer parts of the world.

3. P. PUNCTICULATUS, Nees. in Linnaea. IX. 283. A tall plant with a triangular stem over a foot tall. Leaves often as long as the stem. Umbel simple or compound about 4 inches long with long grassy bracts. Spikelets red spicate half an inch long or more. Glumes dark red blunt with a scarious margin, backs ribbed. Nut broad ellipsoid truncate, half as long as the glume. Hook. fil. Fl. Brit. Ind. l.c. 593. *P. Baccha,* Nees. Linnaea. IX. 283. *Cyperus puncticulatus,* Vahl. Enum. II. 348. Kunth. Enum. II. 15. *C. Baccha,* Kunth. l.c. 115.

Perak: Teluk Anson by the river (Ridley 12579). Distrib. India, China.

4. P. NITENS, Nees. Linnaea. IX. 283. Nov. Act. Acad. Nat. Cur. XIX. Supp. I. 43. A small tufted plant 1-12 inches tall. Leaves as long as the stem or longer. Umbel simple with slender peduncles ½ an inch long, or reduced to a single head. Bracts long. Spikes ¼ inch long, silvery linear oblong. Glumes 10 to 20 closely imbricating ovate mucronate with a single recurved point sides silvery. Keel green with 2 ribs by it on each side. Stamen 1 (rarely 2). Nut obovoid compressed grown. Clarke Fl. Brit. Ind. VI. 591. *C. pumilus,* L. Sp. Pl. 69. Kunth. Enum. II. 4 (part). Roxb. Fl. Ind. 1, 196. Clarke Journ. Linn. Soc. XXI. 43 (not of Nees.). Trim. Fl. Zeyl. V. 19. *C. nitens,* Vahl. Enum. II. 331. Kunth. Enum. II. 3. Boeck. Linnaea. XXXV. 483 (not Retz.). *C. membranaceus,* Vahl. l.c. 330. *C. punctatus,* Roxb. Fl. Ind. I. 193. *C. pulvinatus,* Nees. and Meyen. Wight. Contrib. 74. *C. obstinatus,* Steud. Syn. Cyp. 10.

Singapore (Kunstler 62) Macpherson Road, Changi, Seletar (Ridley 1751); Malacca: Ayer Panas (Cantley's Coll.); Perak: Telok Pinang: Ipoh (Ridley 9574); Penang: Dato Kramat (Curtis 1782).

Distrib. Tropical Asia. Native name "Rumput Taman." Sandy spots local but often abundant.

3. Cyperus, L.

Stems erect simple leafy at the base only. Inflorescence umbelled or capitate. Spikelets linear or oblong compressed, racheola persistent. Glumes distichous 2 lowest and uppermost 1-2 empty, the rest bisexual, eventually deciduous. Stamens 3-2, rarely 1. Anther linear or oblong. Nut triquetrous or plano-convex, plain face flat against the racheola. Style base continuous with the nut, branches 3 linear.

Species 300. Whole world.

Nut with corky edges .. .. 1. *C. platystylis.*
Nut with no corky edges.
Dwarf plant annual, glumes mucronate.
Glumes usually red, nut sides parallel .. 2. *C. castaneus.*
Glumes pale or brown, nut obovoid .. 3. *C. uncinatus.*
Small or middle sized plants with very numerous short spikelets, umbellate. Leaves narrow.
Stems acute triquetrous weak. Umbel spreading .. .. 4. *C. Haspan.*
Stems stiffer. Umbel dense .. .. 5. *C. pulcherrimus.*
Tall woodland plants, leaves broad.
Umbels compound, spikelets green small.
Spikelets flat .. .. 6. *C. diffusus.*
Spikelets turgid .. .. .. 7. *C. bancanus.*
Stem very short umbel rays longer.
Seashore plant .. .. 8. *C. radians.*
Stems tall or slender, rhizome very short or none.
Glumes very short little longer than nut 9. *C. Iria.*
Glumes much longer than nut.
Rachis pilose .. .. 10. *C. pilosus.*
Rachis glabrous.
Glumes silvery .. .. 11. *C. compressus.*
Stems tall and slender, rhizome stout and short.
Umbel simple .. .. 12. *C. Zollingeri.*
Stems slender distant on a long rhizome tuberous at base.
Umbel simple. Spikelets narrow red .. 13. *C. rotundus.*

Umbel usually contracted. Spikelets pale	14. *C. stoloniferous.*
Stems stout tall, rhizome long.	
Glumes narrow distant	15. *C. distans.*
Glumes broad blunt crowded.	
Leaves long	16. *C. procerus.*
Leaves very short almost reduced to sheaths	17. *C. malaccensis.*
Tall leafy plants, not stoloniferous, umbel large. Spikelets linear yellow.	
Spikes cylindric dense	18. *C. radiatus.*
Umbel large compound. Spikes lax.	
Anthers not crested	19. *C. digitatus.*
Anthers crested	20. *C. elatus.*

1. C. PLATYSTSLIS, Br. Prod. p. 214. Stem triquetrous stout 18-24 inches. Leaves $\frac{3}{4}$ the length $\frac{1}{4}$ inch wide. Bracts broad and long longest over a foot, about 8. Umbel 3-7 inches across compound, dense, rays 2-3 inches long, spikelets numerous $\frac{1}{2}$ inch long $\frac{1}{8}$ inch wide. Upper bracts and bracteoles serrulate on edges and keel. Glumes closely imbricate ovate mucronate red about 40 with two ribs outside the keel, style shorter than the nut flat. Nut nearly as long oblong acute, trigonous with a dusky central and yellowish corky angles. Clarke Journ. Linn. Soc. XXI. 117. t. 1. fig. 7-9. Fl. Brit. Ind. VI. 598. *C. pallidus,* Nees. Linnaea. IX. 284. Wight. Contrib. 79. Kunth. Enum. II. 40. *Anosporum pallidum,* Boeck Linnaea. XXXVI. 412.

Malacca: Ching (Ridley); Negri Sembilan: Kuala Pedas (Ridley 10068); Penang (Wallich 3359d). Distrib. India, Malaya, Australia. Rare, occurring in rice fields. The plant is described in the Flora of British India as having long stolons, but as Trimen (Flora of Ceylon Vol. V. p. 25) says also of the Ceylon plant, it has none here at least. There being no tanks here for it and the water in the rice fields being shallow or absent, the plant does not float, but is terrestrial.

2. C. CASTANEUS, Willd. Sp. Pl. I. 278. Dwarf plant glabrous, 2-6 inches tall, stems few slender tufted. Leaves narrow shorter than stems, or as long. Umbel-rays about 5 sometimes reduced to one head. Bracts $\frac{1}{2}$ inch long or less narrow. Spikelets linear $\frac{3}{8}$ inch long. Glumes about 26, obtuse chestnut or pale blunt with a rather long recurved mucro and a raised rib on each side. Stamens 2-1. Nut oblong sides parallel, $\frac{1}{2}$-$\frac{3}{5}$ of the length of the glume. Style shorter. Roxb. Fl. Ind. I. 195. Nees. Wight. Contrib. 79. Kunth. Enum. II. 21. Boeck. Linnaea. XXXV. 496. Clarke Journ. Linn. Soc.

XXI. 87. Fl. Brit. Ind. VI. 598. *C. squarrosus,* Trim. Cat. Ceyl. Pl. 100.

Perak: Ulu Bera (King's Coll. 10805). Rare. Distrib. India, Cochin-China, Australia.

3. C. UNCINATUS, Poir. Encyc. VII. p. 247. Dwarf plant 2-6 inches tall. Leaves narrow as long or longer than the stems, umbels of 4 or 5 rays, or contracted to a single head. Spikelets linear $\frac{3}{8}$-inch long pale or dark red. Glumes strongly three nerved with a strong recurved mucro. Nut oblong ovoid $\frac{1}{2}$ length of glume. *C. cuspidatus,* H. B. K. Nov. Gen. and Sp. I. 204. Kunth. Enum. II. 22. Boeck. Linnaea. XXXV. 496. Clarke Journ. Linn. Soc. XX. 284, XXI. 88, XXV. 80. Fl. Brit. Ind. VI. 599. Trim. Fl. Ceyl. Vol. V. p. 26. *C. angustifolius,* Nees. Wight. Contrib. 79. Kunth. Enum. II. 21. *C. castaneus,* Hance. Journ. Linn. Soc. XIII. 130. Miq. Fl. Ind. Bat. III. 261 (not Willd.). *C. solutus,* Steud. Syn. Cyp. 14 Miq. l.c. 263.

Singapore: Macpherson Road (Ridley 8951); Penang: Dato Kramat (Curtis 1831); Kedah: Yan (Ridley 5153). Distrib. All warm regions. Sandy spots not rare. Only distinguishable from the preceding by the form of the nut.

4. C. HASPAN, Linn. Sp. Pl. 66. Rhizome creeping 6 inches long with distant solitary stems, or short with tufted stems. Stems 4-30 inches long flaccid weak acutely triquetrous usually $\frac{3}{16}$ inch thick. Leaves shorter than stem or nearly as long. Bracts long broad leaf-like, tip triquetrous. Umbel small or usually large compound or simple, loose and thin rays 4 inches or less, spikes few or numerous dense, $\frac{1}{8}$ inch long to $\frac{3}{5}$, narrow. Glumes few usually 10 to 40 ovate obtuse very obscurely mucronate or not, sides reddish, keel green. Nut obovoid triquetrous white or pale brown, very small. Roxb. Fl. Ind. I. 210. Nees. in Wight. Contrib. 80 (partly). Kunth. Enum. II. 34. Boeck. Linn. XXXV. 574 (partly). Clarke Journ. Linn. Soc. XX. 287, XXI. 119. Fl. Brit. Ind. VI. 600. *C. graminifolius,* Poir. Lam. Encyc. VII. 267. Kunth. l.c. 98. *C. pes-avium,* Bertol. Misc. Bot. VIII. 30. t. 3. f. 1.

Singapore (Kurz 140), (Kunstler 61), Changi (Ridley 6113), Seletar (1752); Malacca: Ayer Panas (Cantley's Coll.); Pahang: Pekan (Ridley 1495); Selangor: Kuala Lumpur; Perak (Wray); Penang: Tanjong Bunga (Curtis 1788); Kedah: Gunong Jerai at 3000 feet alt. (Ridley). Distrib. All warm regions. Very common in swampy wet open ground. Native names "Rumput Sumbo," "Rumput Bilis Jantan." Very variable in size and development or umbel.

5. C. PULCHERRIMUS, Willd. Kunth. Enum. II. 35. A tufted plant with numerous stems 14 to 18 inches tall moderately stout.

Leaves shorter $\frac{1}{8}$ inch wide. Umbels decompound 6-8 inches across dense, with very numerous spikelets clustered at the ends of the rays. Spikelets linear $\frac{1}{8}$ inch long or less, yellowish brown. Glumes ovate oblong obtuse, tip incurved. Nut broadly elliptic. Miq. Fl. Ind. Bat. III. 267. Boeck. Linnaea. XXXV. 573. Clarke Journ. Linn. Soc. XXI. 132. Fl. Brit. Ind. VI. 600. Trim. Fl. Ceyl. V. 27. *C. eumorphus,* Steud. Zoll. Verz. Ind. Arch. II. 63. Syn. Cyp. 22. Miq. l.c. 268. *C. Haspan,* Benth. Fl. Austr. VII. 270 (partly).

Pahang: Pekan (Ridley 1282); Selangor: Kuala Lumpur Caves (Ridley 8479); Penang: Pulau Betong (Curtis 1954). Distrib. India, Java and Borneo. Damp spots and paddy fields.

6. C. DIFFUSUS, Vahl. Enum. II. 321. Stem 8 to 36 inches tall, stout triquetrous. Leaves broad green as tall or taller $\frac{1}{4}$ to $\frac{1}{2}$ inch across. Umbel compound 4 to 14 inches across, rays 6 inches or more, in large plants. Bracts longer leafy $\frac{1}{4}$-$\frac{1}{2}$ inch broad, numerous. Spikelets very numerous, $\frac{1}{3}$-$\frac{3}{8}$ inch long, few or many flowered, olive green, digitate, 3 to 9 together. Glumes ovate boat-shaped, mucronate nerves 3 to 5. Stamens 3 or 2, anther sometimes with a small crest. Nut broadly ellipsoid triquetrous, $\frac{2}{3}$ length of glume. Nees. Nov. Act. Acad. Nat. Cur. XIX. Suppl. I. 58. Miq. Fl. Ind. Bat. III. 264. Clarke Fl. Brit. Ind. VI. 603. *C. elegans,* Sw. Obs. Bot. 30. Kunth. Enum. II. 28. Boeck. Linn. XXXV. 533. Clarke Journ. Linn. Soc. XX. 288, XXI. 125. *C. longifolius,* De Cue. Nouv. Ann. Mus. III. 359 (non Poir). *C. moestus,* Kunth. l.c. 31. *C. nigro-viridis,* Thw. Enum. 344.

Singapore: Bukit Timah (Ridley); Pahang: Tahan River (Ridley); Perak: Simpang (Wray 2247); Selangor: Kuala Lumpur; Sungei Ujong. Sandy woods. Native name "Rumput Parah-Parah," "Rumput bumban."

var. *pubisquama.* Spikelets very numerous, longer. Glumes more closely imbricate, occasionally tuberulous scarbrid. *C. pubisquama,* Steud. Zoll. Verz. Ind. Arch. II. 62. Syn. Cyp. 20. Miq. Fl. Ind. Bat. III. 266. Clarke Fl. Brit. Ind. VI. 604. *C. lagorensis,* Stend. Syn. Cyp. 36. *C. diffusus,* Kunth. Enum. II. 30. Boeck. Linnaea. XXXV. 534. Clarke Journ. Linn. Soc. XXI. 127. XXV. 81.

Johor: Kota Tinggi (Ridley); Pahang: Tahan River (Ridley); Selangor: Ginting Bidai (Ridley), Kuala Lumpur (51); Penang (Wallich 3370 B), Pulau Betong (Curtis 2172); Perak (Wray 2247). Distrib. of species Tropics.

7. C. BANCANUS, Miq. Fl. Ind. Bat. Suppl. p. 260, 599. Tufted or solitary 12-18 inches tall. Leaves numerous as long or longer bright green $\frac{1}{2}$ inch wide, flaccid. Stem triquetrous fairly stout. Umbel compound 3-4 inches across. Bracts long and broad leaflike.

Rays of umbel, 2 inches long. Spikes small capitate dense. Spikelets $\frac{1}{16}$ inch long few flowered turgid. Glumes ovate mucronate closely imbricate many ribbed, keel green, sides brown. Nut ovoid lanceolate acute three angled dark brown as long as the glume. *C. turgidulus.* Clarke Journ. Linn. Soc. I. 130. Fl. Brit. Ind. VI. 604. *Scirpus trialatus,* Boeck. Linnaea. XXXVI. 721.

Malacca: St. Paul's Hill (Hervey), (Griffith 6164); Pahang: Pekan (Ridley); Sungei Ujong: Gunong Berumbun (Cantley's Coll.); Penang, Tanjong Bunga (Curtis 883). Distrib. Assam. Burmah, Siam, Malaya. Sandy woods "Rumput Pa-para," "Rumput Chukor Kerbau."

8. C. RADIANS, Nees. and Meyen. Linnaea. IX. 285, Nov. Act. Cur. XIX. Suppl. I. 63. A tufted stiff plant stems sometimes solitary 1-3 inches tall and stout, leaves longer 3-6 inches long. Umbel simple or compound sometimes reduced to a single head, rays 1 to 12 inches long. Bracts numerous $\frac{1}{8}$ across, longer or shorter. Spikes terminal dense capitate. Spikelets $\frac{1}{8}$ inch or more long rarely $\frac{3}{4}$ inch long and $\frac{1}{8}$ through. Glumes closely imbricate ovate mucronate red brown with numerous ribs. Nut obovoid black punctate $\frac{1}{2}$ length of the glume. Benth. Fl. Hongk. 386. Boeck. Linnaea. XXXV. 515. C. B. Clarke Journ. Linn. Soc. XXI. 100. Fl. Brit. Ind. VI. 605. *C. radicans,* Kunth. Enum. II. 95. *C. Griffithii,* Steud. Syn. Cyp. 316. Clarke Journ. Linn. Soc. XXXI. 101. *C. macropus,* Miq. Fl. Ind. Bat. Suppl. 260, 599 (not of Boeck.). *C. sinensis,* Debeaux. Act. Linn. Soc. Bordeaux XXXI. 14. t. 2. XXXVIII. 30.

Singapore: Sandy places along the coast Galang to Changi (Ridley 1747), (Wallich 3427, 3371 B part); Pahang: Sungei Meyang (Ridley 1516, 1519); Malacca (Griffith), Pulau Besar (Ridley); Kelantan: Kamposa (Ridley); Tringanu, Cherating River (Ridley); Penang: Telok Bahang (Curtis), Batu Feringi (Curtis 884). Distrib. Tenasserim, China, Malaya.

A seashore plant always growing in sand. A most variable plant. Some specimens only an inch or so tall solitary stems, others over a foot tall, tufted. A very flaccid green form was obtained at Sungei Meyang.

9. C. IRIA. L. Sp. Pl. 67. Stems solitary or caespitose from 1 to 24 inches tall. Leaves shorter than the stems $\frac{1}{5}$ to nearly $\frac{1}{4}$ inch wide. Umbel 2-5 inches across, or more, usually compound, sometimes simple, primary rays corymbose at the ends or often umbelled again. Spikes loose $\frac{1}{2}$-2 inches long. Spikelets linear, 6-20 flowered. Glumes yellow or brown not imbricating obovate obtuse very short, muticous or minutely mucronate. Nut triquetrous yellow much narrowed to the base nearly as long as the glume. Roxb. Fl. Ind. I. 201. Nees. in Wight. Contrib. 87. Kunth. Enum. II. 68. Miq. Fl.

Ind. Bat. III. 269. Boeck. Linnaea. XXXV. 595. Clarke Journ. Linn. Soc. XX. 289, XXI. 137. Fl. Brit. Ind. VI. 606. Trimen. Fl. Ceyl. V. 18. *C. songaricus,* Karel. and Kiril. Bull. Soc. Mosc. (1841) 859. *C. seminudus,* Moritzi. Verz. Zoll. Pfl. 96 (not Roxb.). *C. diaphaniria,* and *C. microiria,* Steud. Zoll. Verz. Ind. Arch. II. 62. Syn. Cyp. 23. Common in low lying country in waste ground and rice fields.

Singapore: Tanglin, etc. (Ridley 37), (Kurz. 3003); Johor: Scudai River (Ridley); Malacca (Griffith 6178); Perak: Taiping (Ridley); Penang (Curtis 1780, 1871, 1952); Kelantan: Kamposa Pahang. Distrib. All warm parts of Europe, Africa, Asia, and Australia. Native name "Rumput Suloh Belalang."

10. C. PILOSUS, Vahl. Enum. II. 354. Stolons slender. Stems rather flaccid acutely triquetrous 1-3 feet or more long $\frac{3}{16}$ inch through. Leaves shorter broad $\frac{1}{5}$-$\frac{1}{3}$ inch wide. Umbel short compact to large widely spreading rays generally few 1-6 inches long. Bracts longer than the umbel. Secondary umbels, lax or very dense innumerable spikelets. Spikelets $\frac{1}{4}$-$\frac{3}{8}$ inch long, rachis pilose (very rarely glabrescent). Glumes ovate blunt usually red, loosely imbricate keel green. Stamens 3. Nut ovate acute, apiculate trigonous yellow-brown to black, $\frac{3}{4}$ length of glume. Kunth. Enum. II. 80. Boeck. Linnaea. XXXV. 598. Clarke Journ. Linn. Soc. XXI. 148. XXV. 81. Fl. Brit. Ind. VI. 609. *C. paniculatus,* Don. Prodr. 39. *C. donianus,* Dietr. Sp. Pl. II. 290. *C. fimbriatus,* Nees. Wight. Contrib. 86 Kunth. Enum. II. 100. *C. marginellus,* Nees. l.c. 83. *C. procerus,* Roth. Catal. Bot. III. 5. Nov. Pl. 35 (not Rottb.). *C. honestus,* Kunth. l.c. 74. *C. venustus,* Mor. Verz. Zoll. Pfl. 96 (not Br.). *C. subalatus, C. pauciflorus, C. helus, C. piptolepis,* Steud. Syn. Cyp. 31, 34, 315, 40. *C. Heyneanus,* Boeck. Fl. XLII. 440. *C. truncatus,* Fr. and Sav. Pl. Jap. II. 105 (not of Turcz). *C. Griffithianus,* Boeck. Linn. XXXV. 601.

Singapore (Kunstler 111), Jurong (Ridley 65), Galang (9169), Chan Chu Kang (1750); Johor (Ridley 1750 b); Pahang: Pekan (Ridley 1319); Malacca; Selangor: Kuala Lumpur (Ridley), Negri Sembilan: Kuala Sawar (Ridley); Perak: Taiping (Ridley); Penang Waterfall (Curtis 2170, 2171, 1830). Distrib. Africa, Tropical Asia and Australia. Very common in marshes.

11. C. COMPRESSUS, L. Sp. Pl. 68. Tufted plant. Stems several or numerous, 6 inches to a foot or more tall, moderately stout. Leaves nearly or as long, $\frac{1}{8}$ inch wide. Bracts 3-8 inches long. Umbel simple rays 1-3 inches long. Spikelets 3 to 10 in a cluster $\frac{1}{2}$-$\frac{3}{4}$ inch long rather broad. Glumes ovate mucronate, silvery with a green keel many nerved rachilla not winged. Stamens 3. Nut obovoid obtuse acutely triquetrous, black. Burm. Fl. Ind. 21. Roxb. Fl. Ind. I.

194. Nees. in Wight. Contrib. 76. Kunth. Enum. II. 23. Miq. Fl. Ind. Bat. III. 263. Boeck. Linnaea. XXXV. 517. Clarke Journ. Linn. Soc. XX. 284. XXI. 97. Fl. Brit. Ind. VI. 605. Trim. Fl. Ceyl. V. 33 (not of Jacq). *C. pectiniformis,* Nees. and Meyen. Nov. Act. Nat. Cur. XIX. Suppl. I. 57. Common over the whole peninsula, perhaps the commonest species of the genus. Variable in size.

Singapore (Kunstler 53), (Ridley 34); Malacca (Griffith); Pahang: Kuala Berar (Ridley 2831); Perak (Wray 766); Penang (Curtis 1779). Distrib. All warm parts of the world. Native name "Rumput Tiga Sagi."

12. C. Zollingeri, Steud. Zoll. Verz. Ind. Archip. II. 62. Syn. Cyp. 17. Rhizome short stout woody. Stems several 1-2 feet tall bases covered with red sheaths, above triangular less than $\frac{1}{8}$ inch through. Leaves shorter $\frac{1}{8}$-$\frac{1}{4}$ inch wide. Bracts longer than the umbel. Umbel simple, rays 3-4 inches long slender erect or nodding. Spikelets 7 or 8 in an umbellule narrow linear $\frac{1}{2}$ inch long. Glumes somewhat distant boat-shaped narrow subacute, 4 ribbed (when dry) yellow with a green keel. Nut ellipsoid or obovoid bluntly trigonous black, half as long as the glume. Boeck. Linnaea. XXXVI. 352. Clarke Fl. Brit. Ind. VI. 613. *C. rotundus,* Miq. Fl. Ind. Bat. Suppl. 260, 600 (not). *C. tenuiculmis,* Bokl. l.c. 286 (not of Flora LXII. 554). *C. Wightii,* Hance. Journ. Bot. XVI. 14 (not of Nees.). *C. lucidulus,* Clarke Journ. Linn. Soc. XXI. 99, XXV. 80 (not of Klein).

Singapore: Tanglin, Changi, etc. (Ridley), (Kurz, Hullett); Malacca: Pulau Besar (Ridley), (Griffith 6209); Pahang: Pekan (Ridley 1127); Perak: Taiping (Ridley); Penang Waterfall (Curtis 1833). Distrib. Africa, India, China, Australia, Malaya. Common in waste ground.

13. C. rotundus, L. Sp. Pl. 67. Rhizome long creeping wiry subterranean, base of stem bulbous. Leaves shorter than the stem 2-8 inches long $\frac{1}{8}$-$\frac{1}{4}$ inch wide. Stem 6 inches to 24 tall. Umbel simple or rarely compound 1-3 inches long rays slender erect. Bracts shorter or longer. Spikelets slender $\frac{1}{2}$-1 inch long linear dark red. Glumes narrow lanceolate subacute not mucronate, 7 ribbed keel greenish sides dark red closely imbricated, rachilla winged. Nut ellipsoid $\frac{1}{3}$-$\frac{1}{2}$ length of the glume. Roxb. Hort. Beng. 5. Fl. Ind. I. 179. Kunth. Enum. II. 58. Boeck. Linnaea. XXXVI. 283. Clarke Journ. Linn. Soc. XX. 292, XXI. 167. Fl. Brit. Ind. VI. 614. *C. hexastachyus,* Rottb. Descr. and Ic. 28. t. 14. f. 2. Nees. Wight. Contrib. 81 (partly). *C. leptostachyus,* Griff. Itin. Notes 321 (not Nees.). *C. tenuiflorus,* Royk. Ill. 412 (not Rottb.). Very common in waste ground and a great part in gardens.

Singapore (Kurz 3007), Tanglin (Ridley 74); Pahang: Pekan (Ridley 1162); Malacca (Ridley); Penang (Curtis 1981). Distrib. All warm regions. Native name "Rumput Haliya Hitam." The tubers are used for smoking in the case of pain in the nose.

14. C. STOLONIFERUS, Retz. Observ. IV. 10. Rhizome long creeping woody, stems tuberous at the base distant, about 6-18 inches tall. Leaves shorter 3-14 inches long stiff or flaccid to $\frac{1}{8}$ inch across. Umbel simple, usually contracted into a head, sometimes with rays nearly 2 inches long. Bracts longer spikelets $\frac{1}{2}$ inch long or less oblong or linear pale or red. Glumes oblong obtuse closely imbricate, ribs 3, back greenish sides dark red. Style branches long. Nut obovoid or elliptic very obscurely trigonous, black. Nees. Wight. Contrib. 81. Boeck. Linnaea. XXXV. 489. Clarke Journ. Linn. Soc. XX. 286, XXI. 172. Fl. Brit. Ind. VI. 615. *C. littoralis,* Br. Prodr. 216. *C. tuberosus,* Boj. Hort. Maur. 379. Kunth. Enum. II. 50. *C. bulboso-stoloniferus,* Steud. Zoll. Verz. Ind. Arch. II. 62. Syn. Cyp. 18. *C. conjunctus,* Steud. l.c.c. *C. lamprocarpus,* Boeck. l.c. 490.

Singapore (Kurz 2991), Changi (Ridley 1748, 1749); Pahang: Pekan (Ridley 1000); Malacca: Tanjong Kling (Ridley 3123); Penang: Bagan Jennal (Curtis 1953); Lankawi (Curtis 2138). Distrib. Mauritius, India, Malay, China, Australia.

This usually grows in the seashore sand, and is a short wiry plant there, occasionally it occurs in wet tidal mud, and becomes much taller and longer in all parts.

15. C. DISTANS, Linn. f. Suppl. 103. Stoloniferus. Stems usually rather distant stout tufted, bluntly triquetrous 18- inches tall $\frac{1}{8}$ inch through. Leaves shorter or as long $\frac{1}{4}$-$\frac{1}{3}$ inch wide. Bracts (longest) 9 inches to 14 long deep green channelled. Umbel compound lax spreading, 8 to 14 inches across, rays moderately stout. Spikelets $\frac{1}{4}$ inch long very slender $\frac{1}{20}$ inch across dark red 10-20 flowered. Glumes distant oblong elliptic obtuse, sides red, keel green. Stamens 3. Nut oblong or narrowly elliptic black. Jacq. Ic. II. t. 299. Roxb. Fl. Ind. I. 207. Nees. Wight. Contrib. 88. Kunth. Enum. II. 93. Boeck. Linnaea. XXXV. 612. Clarke Journ. Linn. Soc. XX. 290, XXI. 144. Fl. Brit. Ind. VI. 607. Trim. Fl. Ceyl. V. 30. *C. elatus,* Rottb. Descr. and Ic. 37. t. 10 (not of Linn.). *C. nutans,* Presl. Oken. Isis. XXI. 271. Clarke Journ. Linn. Soc. XX. 291, and XXI. 143 (partly). *C. Jacquinii,* Schrad. Linnaea. XI. Litt. Ber. 87. Steud. l.c. 49. *C. graminicola,* Steud. Zoll. Verz. Ind. Arch. II. 63. Syn. Cyp. 49. *C. Kurrii,* Steud. Syn. Cyp. 38. Miq. Fl. Ind. Bat. III. 279.

Singapore (Kurz 3001), (Kunstler 44), Tanglin, etc. (Ridley 34) Malacca (Griffith 6197), Pulau Undan (Cantley's Coll.);

Selangor: Kuala Lumpur (Ridley); Perak (Wray); Penang: Sepoy lines (Curtis 1832), Dato Kramat (Curtis 1785); Kelantan: Kamposa (Ridley). Distrib. Africa, Tropical Asia, Polynesia and America. Very common in ditches, and damp waste ground. Native name "Rumput Wangi."

16. C. PROCERUS, Rottb. Descr. and Ic. 29 t. 5. f. 3. Rhizome slender. Stem rather distant 3 feet tall stout shortly 3 angled. Leaves long over 2 feet, and ¼ inch wide. Bracts as long or longer than umbels. Umbel lax 5-7 spikes occasionally branched 3 inches long or little more, rays rather slender. Spikelets remote ⅜-1 inch long ⅛ inch wide 20-46 flowered. Glumes broad ovate quite blunt red keel paler, ribs 3-4 on each side. Nut obovoid half as long as the glume. Nees. Wight. Contrib. 83. Roxb. Fl. Ind. I. 203. Kunth. Enum. II. 72. Boeck. Flora. LVIII. 84. Clarke Journ. Linn. Soc. XXI. 152. Fl. Brit. Ind. VI. 610. *C. ornatus*, Br. Prodr. 217. *C. carnosus*, Nees. l.c. *C. amoyensis*, Hance. Ann. Sc. Nat. Ser. V. 249. *C. Heynei*, Boeck. Linn. XXXV. 600.

Malacca: rice fields (Ridley 3536); Penang Waterfall (Curtis 1787); Kelantan: Kamposa (Ridley). Distrib. Tropical Asia and Australia.

17. C. MALACCENSIS, Lam. Ill. I. 146. Rhizome stout woody creeping. Stems distant stout triangular 2 to 3 feet tall. Leaves few short, sheathing for 6 or 8 inches, limb broad ¼ inch. Bracts long broad. Umbel 3-4 inches long, rays usually short, sometimes compound, usually congested. Spikelets narrow linear ½ inch long, 6-12 flowered. Glumes boat-shaped blunt, no keel, reddish, edge paler rather distant. Nut narrowly oblong, trigonous ¾ length of glume. Kunth. Enum. II. 71. Boeck. Linnaea. XXXV. 603. Clarke Journ. Linn. Soc. XXI. 147. Fl. Brit. Ind. l.c. 608. *C. odoratus*, L. Sp. Pl. 46 (partly). *C. incurvatus*, Roxb. Fl. Ind. I. 196. *C. Pangorei*, (not Poir.). *C. Wallichii*, Wight. Contrib. 83. *C. spaniophyllus*, Roxb. l.c. 202). *C. scoparius*, De Cne Nouv. Ann. Mus. III. 359 Steud. Cyp. 21. Miq. Fl. Ind. Bat. III. 267.

Singapore: Balestier Plain (Ridley 5883), (Hullett 239); Pahang: Pekan (Ridley 1201); Malacca; Tringganu: Pulau Ketam (Ridley); Kelantan: Kamposa (Ridley); Lankawi Islands (Ridley); Kedah: Alor Star (Curtis 2110); Province Wellesley (Curtis 2165). Distrib. Persia, Indo-Malaya, Australia. Common in tidal rivers in mud.

18. C. RADIATUS, Vahl. Enum. II. 369. A tall plant 1 to 3 feet high. Leaves ⅜ inch wide or less, about ⅔ length of the stem. Umbel simple or compound about 6 inches across, rays 3 inches or less. Bracts long 12 inches or less. Spikes 1 inch long ⅓ inch across very dense. Spikelets ⅛-⅕ inch long of 13-15 glumes yellowish brown.

Glumes closely imbricating short and broad small, mucronate. Rachilla with persistent oblong wings. Nut ovoid nearly half as long as the glume. Kunth. Enum. II. 74. Boeck. Linnaea. XXXVI. 317. Clarke Journ. Linn. Soc. XXI. 185. Fl. Brit. Ind. VI. 617. *C. involucratus,* Poir. Lam. Encyc. VII. 253. *C. verticillatus,* Roxb. Fl. Ind. I. 206. Kunth. l.c. 71. Nees. Wight. Contrib. 87. *C. digitatus,* Nees. l.c. 85 (not Roxb.). *C. obscurus,* Nees. Hook. Kew Journ. VI. 27.

Johore: Scudai River (Ridley 1752); Penang: Bagan Jennal (Curtis 1956).

19. C. DIGITATUS, Roxb. Fl. Ind. I. 205. Stem tall 3 or 4 feet high stout triquetrous. Leaves long $\frac{3}{8}$ broad often as long as the stem. Umbel very large as much as 2 feet across, compound with long spreading rays. Bracts usually longer than the umbel $\frac{1}{4}$ inch across. Bracteoles of secondary umbels usually large. Spikes cylindric 2 inches long, golden brown. Spikelets numerous very small $\frac{1}{8}$-$\frac{1}{2}$ inch long linear. Glumes narrow closely imbricate acute ovate. Nut oblong ovoid $\frac{1}{2}$ as long as the glume. Clarke Fl. Grit. Ind. VI. 618. *C. auricomus,* Benth. Fl. Austr. Clarke Journ. Linn. Soc. XXI. 188 (partly). *C. venustus,* Nees. Wight. Contrib. 86. Kunth. Enum. II. 68. Bekler. Linn. XXXVI. 316. *C. Neesii,* Kunth. l.c. 101. Bekler. l.c. 315. Trim. Journ. Bot. XXIII. 140. *C. quinqueflorus,* Steud. Syn. Cyp. 37 (part and *C. tuberiferus,* Syn. Cyp. 41. *Papyrus venustus,* Nees. Linnaea. X. 138.

Johor: Batu Pahat (Ridley 10999); Pahang: Pekan (Ridley 1260); Selangor: Kuala Lumpur (Ridley); Malacca; Perak: Kuala Kangsar (Ridley); Dindings: Bruas (Ridley); Sungei Ujong: Port Dickson; Penang: Dato Kramat (Curtis 1872), (Wallich 3249, 3438 C). Common in ditches in the low country. The biggest of our species. Distrib. All the tropics.

20. C. ELATUS, L. Sp. Pl. 67. Stem 3 to 4 feet tall. Leaves nearly as long, half inch broad. Umbel large compound, primary rays 6 inches long. Spikes narrow cylindric dense. Spikelets brown suberect linear 14 flowered. Wings of rachilla lanceolate caducous. Anthers narrow oblong, crest $\frac{1}{3}$ to half length of anther. Nut $\frac{1}{2}$ to $\frac{2}{3}$ length of the glume. Clarke Journ. Linn. Soc. XXI. 189. Fl. Brit. Ind. VI. 618.

Penang (Wallich 3341 A). Not seen. Perhaps the locality is incorrect. Distrib. Madras, Malaya, Polynesia.

4. MARISCUS, Vahl.

Plants of the habit of *Cyperus.* Stems usually tall, leaves grass-like. Glumes persistent 2 lowest empty upper ones bisexual, racheola disarticulating above the two lowest glumes, leaving a knob.

Species 160. All warm regions.

Base of stem thickened with membranous sheaths. Spikelets in a dense white head	1. *M. Dregeana.*
Bases of stems not oblong thickened. Spikelets green, with 1-2 (rarely 3) nuts.	
Rhizome short thick.	
Spikes cylindric on long rays	2. *M. Sieberianus.*
Spikes broad on short rays or sessile	3. *M. cyperinus.*
Rhizomes slender	4. *M. tenuifolius.*
Spikelets oblong reddish with 3-6 nuts. Umbel compound, coarse plant ..	5. *M. albescens.*
Spikelets linear in globose heads dark red, nuts 4 to 14	6. *M. microscephalus.*

1. M. Dregeanus, Kunth. Enum. II. 120. Stems tufted not stoloniferous, swollen at the base and there covered with reddish or dotted sheaths 1-2 feet tall. Leaves usually shorter hardly $\frac{1}{8}$ inch wide. Bracts long generally deflexed. Umbel reduced to a head compact $\frac{1}{2}$ inch long ovoid very dense, white. Spikelets ovoid $\frac{1}{8}$ inch long or less. Glumes ovate not keeled or mucronate 2-6, with many ribs. Nut oblong or obovoid black narrowed at base, shortly beaked punctate $\frac{1}{2}$-$\frac{2}{3}$ as long as the glume trigonous with rounded angles. Clarke Fl. Brit. Ind. VI. 620. *M. irroratus,* Nees. Hook. Kew Journ. VI. 28. *M. kyllingiaeformis,* Boeck. Flora XLII. 443, 496. *Cyperus dubius,* Rottb. Neu. Schr. Gesells. Freunde. Berl. IV. 193. Roxb. Fl. Ind. I. 189. Nees. Wight. Contrib. 85. Boeck. Linnaea. XXXVI. 336 (part). Clarke Journ. Linn. Soc. XX. 285, XXI. 197 (not of Rottb.). *C. kyllingiaeoides,* Vahl. Enum. II. 312. Kunth. Enum. II. 94. *C. cruentus,* Boeck. l.c. 338 (not Roxb.). *Scirpus glomeratus,* L. Sp. Pl. 32. *Schoenus coloratus,* var. B. Linn. Sp. Pl. Ed. II. 64. *Sch. niveus,* Linn. Syst. Veget. (ed. XIII) 81.

Singapore from Galang to Changi (Ridley 1746); Johor: Batu Pahat (Ridley 10222); Malacca (Griffith 6172), (Cuming 2372); Pulau Besar (Ridley); Dindings: Lumut (Ridley); Pahang: Sungei Meyang (Ridley); Rumpin River; Kelantan: Kamposa (Ridley); Africa, India, Borneo. Common in seashore sand.

2. M. Sieberianus, Nees. Linnaea. IX. 286. Rhizome short. Stems often stout at base and reddish 18-30 inches tall, bluntly triangular and often $\frac{1}{4}$ inch through. Leaves shorter rather flaccid dark green $\frac{1}{4}$-$\frac{3}{8}$ inch wide. Bracts 5-10, long and broad, longer than the umbel. Umbel 5-10 rays, 1-4 inches long erect. Spikes cylindric $\frac{1}{2}$ to $1\frac{1}{2}$ inch long spikelets crowded spreading green, $\frac{1}{8}$ inch long,

linear. Empty bracts lanceolate persistent. Fertile glumes 1-2 narrow not distinctly keeled. Nut narrow linear oblong brown, bluntly trigonous. Clarke Fl. Brit. Ind. VI. 622. Trim. Fl. Ceyl. V. 42. *M. umbellatus,* Vahl. Enum. II. 376 (part). Nees. in Wight. Contrib. 90. Kunth. Enum. II. 18. *M. cyperinus,* var. a and var. b. in part. Nees. Wight. Contrib. 90. Royle. Ill. 412. *Scirpus cyperoides,* Linn. Mant. 181. *Kyllinga umbellata,* Roxb. Fl. Ind. 1, 182. *Cyperus umbellatus,* Miq. Ann. Mus. Lugd. Bat. II. 142. Clarke Journ. Linn. Soc. XXI. 201 (partly). *C. ovularis,* Boeck. Linnaea. XXXIII. (partly). *C. cylindrostachys,* Boeck. l.c. 383 (partly). *C. Steudelianus,* Boeck. Engler. Jahrb. V. (1884) 91.

Singapore: Seletar (Ridley 69), Tanglin (10638); Johor: Tanah Runto (Ridley), Kuala Sembrong (Kelsall 4095); Malacca (Griffith), Alor Gajah (Ridley); Pahang: Rumpin River (Ridley); Selangor: Kuala Lumpur (Ridley 58); Penang (Curtis); Kedah: Gunong Jerai (Ridley). Distrib. Africa, India to Polynesia. Common in waste ground. Native name "Mendarong Ekor Tupai." (Squirrel-tail sedge).

var. *evolutior,* Clarke. Fl. Brit. Ind. VI. 622. A much larger plant with linear spikelets bearing 2-4 nuts, widely spreading and very numerous. Glumes broad ribbed. *C. umbellatus* var. *cylindrostachys,* Journ. Linn. Soc. XXI. 201. *C. biglumis,* Clarke (partly) l.c. 199.

Johor: Serom (Ridley 11012); Pahang: Pekan (Ridley 1582); Selangor: Gua Batu, Petaling (Ridley 10171); Penang: Pulau Betong (Curtis 1955).

3. M. CYPERINUS, Vahl. Enum. II. 377. Rhizome hardly any. Stem 18 inches tall. Leaves narrow usually long. Bracts long and narrow, umbel simple short, rays very short $\frac{1}{4}$ inch or less. Spikes $\frac{1}{2}$ inch long lax. Spikelets spread-linear $\frac{1}{4}$ inch long reddish. Glumes narrow keeled up to 5 in number. Nut linear oblong curved, chestnut brown, trigonous. Nees. Wight. Contrib. 90 (Bonly). Clarke Fl. Brit. Ind. VI. 621. Trim. Fl. Ceyl. V. 42. *M. umbellatus,* Moritzi Verz. Zoll. Pfl. 98. Zoll. Verz. Ind. Arch. II. 63. *M. sondaicus,* Miq. Fl. Ind. Bat. II. 289. *Kyllinga cyperina,* Retz. Obs. VI. 21. *C. umbellatus,* Benth. Fl. Hongkong 386 (partly). *C. paniceus,* Boeck. Linnaea. XXXVI. 381 (partly). *C. umbellatus,* forma *cyperina,* Clarke Journ. Linn. Soc. XXI. 200.

Singapore Garden Weed (Ridley 8948), Gelang; Johor: Pulau Tioman; Pahang: Pekan (Ridley 1270); Malacca (Griffith 6243), (part); Sungei Ujong: Gunong Berumbun (Cantley's Coll.); Penang: Telok Bahang (Curtis); Sittang (Gaudichaud 14 fide Clarke). Distrib. Trop. Asia and Polynesia. Native name "Rumput Pinang," "Rumput Payong."

4. M. TENUIFOLIUS, Schrad. in Marb. Fl. Braz. II. 46. Stolons slender hardly $\frac{1}{25}$ inch through clothed with lanceolate striate scales. Stems slender flaccid. Leaves very narrow. Umbel simple contracted, rays 0-1 inch long. Spikes solitary cylindric or ovoid, loose. Spikelets with 1-3 (usually 2) nuts dusky green ultimately subcrect. Clarke Fl. Brit. Ind. VI. 622. Trim. Fl. Ceyl. V. 43. *C. umbellatus* var. *laxata,* Clarke Journ. Linn. Soc. XXI. 201.

Malacca (Griffith 6241). Not seen. Distrib. India, Ceylon.

5. M. ALBESCENS, Gaud. Freyc. Voy. Bot. 415. A coarse tufted plant. Leaves stiff rather thick ribbed and transversely barred when dry, longer than stems, $\frac{1}{4}$ inch wide or less. Stems stiff triangular about 3 feet long. Umbels usually large and dense 3-12 inches across, rays 4- inches long. Spikes crowded rather turgid $\frac{1}{4}$ inch long. Glumes short ovate obtuse striate not keeled pale or reddish, striate not keeled. Nut obovoid trigonous hardly half as long as the glume pale brown. Clarke Fl. Brit. Ind. VI. 623. Trim. Fl. Ceyl. V. 40. *Cyperus pennatus,* Lam. Ill. I. 144. Kunth. Enum. II. 80. Clarke Journ. Linn. Soc. XXI. 194. *C. canescens,* Vahl. Enum. II. 355. Nees. Wight. Contrib. 84. Boeck. Linnaea. XXXVI. 340.

Singapore: Tanjong Ru, Bajau (Ridley); Johor: Tanah Runto (Ridley 1745), Batu Pahat (10993); Pahang: Sungei Meyang (Ridley 1111); Malacca (Griffith), Alor Gajah (Ridley), Ayer Panas (Cantley's Coll.); Kedah: Yan (Ridley); Kelantan: Kamposa (Ridley 1745). Distrib. Africa, Tropical Asia, Australia and Polynesia. Native name "Rumput Sulingsen," "Rumput Surai." Common near the sea, rarer in land.

6. M. MICROCEPHALUS, Presl. Rel. Haenk. I. 182. Large tufted plant, rhizome short. Leaves nearly as long as the stem $\frac{1}{3}$ inch across. Stem 18 inches to 3 feet tall. Umbel compound 8-12 inches and more across, rays 1-6 inches long. Bracts long. Spikes numerous. Spikelets arranged in stellate globose heads, radiating in all directions dark red, more rarely pale, $\frac{1}{4}$-$\frac{1}{2}$ inch long narrow linear. Glumes narrow lanceolate keeled 4-8 in a spikelet. Nut narrow linear curved beaked. Wings of rachilla oblong. Clarke Fl. Brit. Ind. VI. 624. Trim. Fl. Ceyl. V. 40. *M. dilutus,* Nees. Wight. Contrib. 90. *M. giganteus,* Boeck. Flora XLII. 443. *Cyperus compactus,* Retz. Obs. V. 10. *C. dilutus,* Vahl. Enum. II. 357. Kunth. Enum. II. 92. Boeck. Linnaea. XXXVI. 354. Clarke Journ. Linn. Soc. XXI. 193. *C. spinulosus,* Roxb. Fl. Ind. I. 203.

Singapore (Wallich 3439), Galang (Ridley); Johor: Batu Pahat (Ridley); Pahang: Pekan (Ridley); Perak: Teluk Anson (Ridley 10768); Malacca (Griffith); Penang Waterfall (Curtis 1874); Selangor: Kuala Lumpur (Ridley); Kelantan: Kamposa (Ridley); Legeh: Tomoh (Machado).

5. Eleocharis, R. Br.

Glabrous, rhizome short or long. Stems simple erect, with no nodes. Leaves 0. Sheaths cylindric truncate or with a small apical tooth. Spikelet terminal solitary, erect. Glumes imbricate all round obtuse. Lowest and most of the other glumes fertile. Uppermost ones empty. Hypogynous bristles 8-5 rarely fewer. Stamens 3-1. Anthers linear oblong not crested. Style linear with 2 or 3 branches bare dilated constricted on the nut, but persistent. Nut obovoid, plano convex when the style is bifid triquetrous (when trifid).

Species 113. Whole world.

Stems stout tall stoloniferous or rhizome creeping.

Stems septate within robust	1. *E. plantaginea.*
Stems septate slender	2. *E. equisetina.*
Stems not septate terete	3. *E. variegata.*
Stems not septate triquetrous	4. *E. fistulosa.*

Stems slender not septate.

Spikelets cylindric	5. *E. ochrostachys.*
Spikelets subglobose	6. *E. capitata.*
Stems setaceous very short	7. *E. chaetaria.*

1. E. plataginea, Br. Prod. 224. Rhizome stout. Stems 18-26 inches tall rather stout transversely septate when dry. Spike cylindric not wider than the stem, ¾ to 1 inch long. Glumes straw colour when dry, oblong rounded with a low green keel. Style 2-3 fid. Nut ¼-⅓ of length of glume obovate yellow smooth and shining. Bristles little longer scabrid. Miq. Fl. Ind. Bat. III. 302. Clarke Fl. Brit. Ind. VI. 625. Trim. Fl. Ceyl. V. 68. *E. tumida,* R. & S. Syst. Mant. II. 86. *Scirpus plantaginoides,* Rottb. Descr. & Ic. 45. t. 15. f. 2. *S. plantagineus,* Retz. Obs. V. 14. Roxb. Fl. Ind. I. 212. *S. tumidus,* Roxb. l.c. *Limnochloa plantaginea,* and *L. tumida,* Nees. Wight. Contrib. 114. *Heleocharis plantaginea,* Boeck. Linnaea. XXXVI. 47 (in part).

Singapore: Reservoir (Ridley), Garden Lake; Malacca: Ayer Panas, Chabau (Ridley 10010). Distrib. Tropics of the old world. In grassy swamps in rice fields.

2. E. equisetina, Presl. Rel. Haenk. I. 195. Rhizome small slender. Stems slender 12-15 inches long transversely septate when dry. Spikes wider than stem cylindric subacute ¼-½ inch long straw coloured. Glumes broad rounded not at all keeled. Style arms 2. Nut obovoid white smooth. Clarke Fl. Brit. Ind. VI. 626. Trim. Fl. Ceyl. V. 69.

Penang: Waterfall Quarry (Curtis 1905, 2176), (Didrichsen 3487). Distrib. Ceylon, New Caledonia and Philippines. Very near *E. plantaginea* but the stems more slender.

3. E. VARIEGATA, Kunth. Enum. II. 153. var. *laxiflora, Clarke.* Stems not septate 12 to 24 inches tall slender or moderately stout, sheaths with a round mouth and short triangular limb. Spike ½ inch long or little more. Glumes green, with darker centre oblong obtuse. Hypogynous bristles 6 or 7 longer than the nut. Styles 3 dark red, base of style conic green, nut ovoid yellow. Clarke Fl. Brit. Ind. VI. 626. Trim. Fl. Ceyl. V. 69. *Scirpus laxiflorus,* Thw. Enum. 435.

Singapore Garden Lake, Reservoir (Ridley 5881, 1726), (Kurz 3014); Johor: Batu Pahat (Ridley); Malacca: Merlimau (Derry 242), (Griffith 6229); Penang: Pekan (Ridley 1548): Perak: Selama (Wray 4264); Penang Waterfall (Curtis 2177), Telok Bahang (Curtis 1865). Distrib. India, Malaya, China and Polynesia.

The commonest species, very abundant in ponds and ditches. The typical *E. variegata,* native of the Mascarene Islands has the glumes red edge and bristles not as long as the nut.

4. E. FISTULOSA, Schultes. Roem. & Schultes. Syst. II. Mant. 89. Stems rather stout triquetrous above 18 inches tall. Spike ½-1 inch long broader many flowered, acute. Glumes broad ovate obtuse ribbed when dry laxly imbricating, dirty whitish. Bristles 6 as long as the nut. Nut ovoid, base narrowed, polished brown. Style biconvex arms 2 conic base short. Clarke Fl. Brit. Ind. VI. 627. Trim. Fl. Ceyl. V. 70. *E. acutangula & media,* Schultes l.c. 91. *E. planiculmis,* Steud. Syn. Cyp. 80. Zoll. Verz. Ind. Arch. II. 62. *Scirpus fistulosus,* Poir. Encyc. VI. 749. *S. acutangulus, S. medeius,* Roxb. Fl. Ind. I. 213. *Limnochloa acutangula* and *media,* Nees. Wight. Contrib. 114. *Heleocharis fistulosa,* Boeck. Linn. XXXVI. 472.

Malacca (Griffith 6230), Tanjong Kling (Ridley 3121), Bukit Sabukor (Derry 3535).

5. E. OCHROSTACHYS, Steud. Syn. Cyp. 80. Stems slender 12-14 inches long, with numerous barren ones, terete not septate. Spikelet slender ¾ inch long pale. Glumes lax few narrow scarcely broader than the stem subacute. Hypogynous bristles 8. Style trifid, longer than the nut. Nut obovoid truncate light brown ribbed, base of style conic. Clarke Fl. Brit. Ind. VI. 626. *Heleocharis subulata,* Boeck. Flora XLI. 412.

Singapore: Tanglin (Ridley 3), Telok Kurau (10444), Changi, Seletar (5799); Johor: Kota Tinggi; Malacca (Griffith); Merlimau (Derry 229); Dindings: Lumut; Pahang: Pekan (Ridley 1331). Common in ponds and ditches. "Rumput Sikat."

6. E. CAPITATA, R. Br. Prodr. 225. Tufted plant 2 to 16 inches tall, stems numerous slender. Spikelets $\frac{1}{8}$-$\frac{1}{6}$ inch long, subglobose conic obtuse pale. Glumes oblong ovate obtuse. Bristles 6-7 red or brown. Style bifid. Nut obovoid compressed black smooth. Clarke Fl. Brit. Ind. VI. 627. Decne. Nouv. Ann. Mus. III. 361. Miq. Fl. Ind. Bat. III. 299. Trim. Fl. Ceyl. V. 72. *Scirpus capitatus,* Linn. (partly). Roxb. Fl. Ind. I. 215. *Eleogenus capitatus,* Nees. Wight. Contrib. 112. *Heleocharis capitata,* Boeck. Linnaea. XXXVI. 461.

Singapore: Changi (Ridley 133), Tampenis (5800), Teban (5798). Distrib. Europe, N. Africa, Trop. Asia, Polynesia and America. In damp spots by jungle parts very local.

7. E. CHAETARIA, R. & Schultes. Syst. II. 1541 & Mant. II. 90. A small tufted plant, (sometimes developing long slender proliferous hair-like stems in water), 3 to 6 inches tall, stems very slender sheaths at base red. Spikelet $\frac{1}{8}$ inch long with few flowers. Glumes lanceolate acute subdistichous usually dark red with light edge and central bar. Bristles little longer than the nut. Nut large planoconvex

6. FIMBRISTYLIS, Vahl.
Has been inadvertently transposed, and will be found on page 87.

sula. Often bulbilliferous and spreading itself by plants developed in the axils of the spikelet.

7. BULBOSTYLIS, Kunth.

Small tufted plants, with slender stems leafy only at the base, leaves very narrow and sheaths usually finely hairy. Corymb umbellate or congested. Spikelets small many flowered. Glumes imbricate on all sides, 1 or 2 lowest ones empty. Hypogynous bristles absent. Stamens usually 2. Style as long as the nut linear glabrous, trifid, base very small bulb shaped, deciduous leaving a minute button on the top of the nut. Nut obovoid trigonous smooth.

Species about 70. All warm regions.

Stem glabrous	1. *B. barbata.*
Stem pubescent	2. *B. puberula.*

1. B. BARBATA, Kunth. Enum. II. 208. Glabrous. Stems 3-12 inches tall very slender. Leaves half as long very narrow. Spikelets

Penang: Waterfall Quarry (Curtis 1905, 2176), (Didrichsen 3487). Distrib. Ceylon, New Caledonia and Philippines. Very near *E. plantaginea* but the stems more slender.

3. E. VARIEGATA, Kunth. Enum. II. 153. var. *laxiflora, Clarke.* Stems not septate 12 to 24 inches tall slender or moderately stout, sheaths with a round mouth and short triangular limb. Spike ½ inch long or little more. Glumes green, with darker centre oblong obtuse. Hypogynous bristles 6 or 7 longer than the nut. Styles 3 dark red, base of style conic green, nut ovoid yellow. Clarke Fl. Brit. Ind. VI. 626. Trim. Fl. Ceyl. V. 69. *Scirpus laxiflorus,* Thw. Enum. 435.

Singapore Garden Lake, Reservoir (Ridley 5881, 1726), (Kurz 3014); Johor: Batu Pahat (Ridley); Malacca: Merlimau (Derry 212), (Griffith 6229); Penang: Pekan (Ridley 1548); Perak: Selama (Wray 4264); Penang Waterfall (Curtis 2177), Telok Bahang (Curtis 1865). Distrib. India, Malaya, China and Polynesia.

The commonest species, very abundant in ponds and ditches

fistulosus, Poir. Encyc. VI. 749. *S. acutangulus, S. medeius,* Roxb. Fl. Ind. I. 213. *Limnochloa acutangula* and *media,* Nees. Wight. Contrib. 114. *Heleocharis fistulosa,* Boeck. Linn. XXXVI. 472.

Malacca (Griffith 6230), Tanjong Kling (Ridley 3121), Bukit Sabukor (Derry 3535).

5. E. OCHROSTACHYS, Steud. Syn. Cyp. 80. Stems slender 12-14 inches long, with numerous barren ones, terete not septate. Spikelet slender ¼ inch long pale. Glumes lax few narrow scarcely broader than the stem subacute. Hypogynous bristles 8. Style trifid, longer than the nut. Nut obovoid truncate light brown ribbed, base of style conic. Clarke Fl. Brit. Ind. VI. 626. *Heleocharis subulata,* Boeck. Flora XLI. 412.

Singapore: Tanglin (Ridley 3), Telok Kurau (10444), Changi, Seletar (5799); Johor: Kota Tinggi; Malacca (Griffith); Merlimau (Derry 229); Dindings: Lumut; Pahang: Pekan (Ridley 1331). Common in ponds and ditches. "Rumput Sikat."

6. E. CAPITATA, R. Br. Prodr. 225. Tufted plant 2 to 16 inches tall, stems numerous slender. Spikelets $\frac{1}{8}$-$\frac{1}{6}$ inch long, subglobose conic obtuse pale. Glumes oblong ovate obtuse. Bristles 6-7 red or brown. Style bifid. Nut obovoid compressed black smooth. Clarke Fl. Brit. Ind. VI. 627. Decne. Nouv. Ann. Mus. III. 361. Miq. Fl. Ind. Bat. III. 299. Trim. Fl. Ceyl. V. 72. *Scirpus capitatus,* Linn. (partly). Roxb. Fl. Ind. I. 215. *Elcogenus capitatus,* Nees. Wight. Contrib. 112. *Heleocharis capitata,* Boeck. Linnaea. XXXVI. 461.

Singapore: Changi (Ridley 133), Tampenis (5800), Teban (5798). Distrib. Europe, N. Africa, Trop. Asia, Polynesia and America. In damp spots by jungle parts very local.

7. E. CHAETARIA, R. & Schultes. Syst. II. 1541 & Mant. II. 90. A small tufted plant, (sometimes developing long slender proliferous hair-like stems in water), 3 to 6 inches tall, stems very slender sheaths at base red. Spikelet $\frac{1}{8}$ inch long with few flowers. Glumes lanceolate acute subdistichous usually dark red with light edge and central bar. Bristles little longer than the nut. Nut large planoconvex obovoid, with a very broad triangular 3 lobed top and the 3 angles forming ribs. Clarke Fl. Brit. Ind. VI. 629. Trim. Fl. Ceyl. V. 71. *E. setacea,* R. Br. Prod. 224. *Cyperus setaceus,* Retz. Obs. V. 10. Roxb. Fl. Ind. 1. 185. *Chaetocyperus Limnocharis,* Nees. in Wight. Contrib. 96. *Ch. setaceus,* Nees. Linnaea. IX. 289. Miq. Fl. Ind. Bat. III. 298. *Heleocharis chaetaria,* Boeck. Linnaea. XXXVI. 428.

Singapore Gardens (Ridley 1), Seletar; Malacca (Griffith 6319), Tanjong Kling (Ridley); Selangor: Kuala Lumpur (Ridley). Distrib. All the Tropics.

Damp spots by ditches etc., probably common all over the peninsula. Often bulbilliferous and spreading itself by plants developed in the axils of the spikelet.

7. BULBOSTYLIS, Kunth.

Small tufted plants, with slender stems leafy only at the base, leaves very narrow and sheaths usually finely hairy. Corymb umbellate or congested. Spikelets small many flowered. Glumes imbricate on all sides, 1 or 2 lowest ones empty. Hypogynous bristles absent. Stamens usually 2. Style as long as the nut linear glabrous, trifid, base very small bulb shaped, deciduous leaving a minute button on the top of the nut. Nut obovoid trigonous smooth.

Species about 70. All warm regions.

Stem glabrous	1. *B. barbata.*
Stem pubescent	2. *B. puberula.*

1. B. BARBATA, Kunth. Enum. II. 208. Glabrous. Stems 3-12 inches tall very slender. Leaves half as long very narrow. Spikelets

to 20 in a head, about $\frac{1}{8}$ inch long, brown. Glumes ovate lanceolate subacute chestnut with a green keel, mucronate, minutely ciliate at the edge. Nut obovate trigonous smooth pale with a minute black button. Clarke Fl. Brit. Ind. VI. 651. Trim. Fl. Ceyl. V. 66. *B. Wallichiana* and *B. Willdenowii*, Kunth. l.c. 209, 210. *Scirpus barbatus*, Rottb. Descr. and l.c. 52. t. 17. fig. 4. Boeck. Linnaea. XXXVI. 751 (excl. var. B). *Sc. Antarcticus*, Thumb. Fl. Cap. 96. Roxb. Fl. Ind. I. 223 (not of Linn.). *Sc. monander*, Roxb. l.c. 222. *Isolepis barbata*, Br. Prodr. 222. Nees. in Wight. Contrib. 109. Miq. Fl. Ind. Bat. III. 310. *I. Wallichiana*, Roem & Schultes Syst. Mant. II. 533. *I. capillaris*, Don. Prodr. 39 (not Roem & Schultes). *I. Cumingi* & *I. involucellata*, Steud. Syn. Cyp. 101. *Fimbristylis monandra*, R. & S. Mant. II. 59. *F. barbata*, Benth. Fl. Austral. VII. 321.

Singapore (Kurz 3002), Changi, Tanglin (Ridley), Pongol (Murton); Malacca (Maingay); Pahang: Pekan (Ridley 1238); Penang: Batu Feringi (Curtis 885); Trigganu: Pulau Ketam (Ridley). Distrib. All warm regions. Very common in sandy spots.

I came across in Pekan, a form in which the heads of spikelets were nearly an inch across with few slender rays $\frac{1}{2}$ inch or more long bearing solitary spikelets on the end, the spikelets $\frac{1}{4}$ inch long.

2. B. PUBERULA, Kunth. Enum. II. 213. Habit of last species. Stems 6 to 14 inches long pubescent. Leaves pubescent hardly half as long. Spikelets crowded into a head (rarely lax). Glumes pubescent, strongly keeled with a longer mucro. Nut larger obovoid trigonous transversely wrinkled. Clarke Fl. Brit. Ind. VI. 652. *Scirpus puberulus*, Poir. Encycl. VI. 767. Boeck. Linnaea. XXXVI. 767. *S. Wightianus*, Boeck. l.c. 765 (part). *Isolepis gracilis*, Nees. Wight. Contrib. 109. Kunth. l.c. V. 217. *I. puberula*, Steud. Syn. Cyp. 103. *Cyperus pubescens*, Steud. l.c. 50.

Singapore (Burbidge), (Cantley's Coll. 3045, 3059), Changi (Ridley 1727); Malacca (Kunstler 35, 36); Perak (Cantley's Coll.); Penang (Curtis). Distrib. Ceylon, India, Malaya. Much rarer than the preceding.

8. SCIRPUS, L.

Glabrous herbs, short or tall, leafy at the base only or leafless. Stems terete or trigonous. Spikelets 1 to many terminal or lateral, oblong or ovoid. Glumes spirally imbricated, lowest 2 and uppermost empty. Bristles absent or 2 to 7 scabrid. Stamens 1 to 3. Style trifid or bifid slender, base not dilated. Nut obovoid trigonous or biconvex with no button on the top.

Species 125. All temperate and tropical regions.

Spikelets 1 to many in a lateral head.

Tall leafless plant, stem stout .. .. 1. *S. mucronatus.*

Slender plants with narrow leaves, annual.

Bristles 0 .. .. 2. *S. supinus.*

Bristles 6-7 .. .. 3. *S. erectus.*

Spikelets in large umbels .. .. .. 4. *S. grossus.*

1. S. MUCRONATUS, Linn. Sp. Pl. 73. Rhizome present or not. Stems tall stout triquetrous 3-4 feet tall, leaflets except for a basal sheath with a papery limb. Spikelets 6 or 9 in a single dense head or often 2 heads. Bract like the continuation of the stem 2 inches long acute. Spikelets cylindric ¼-½ inch long. Glumes ovate mucronate brown edges pubescent. Bristles 6 much longer than the nut. Style trifid. Nut obovoid bluntly trigonous black smooth. Rchb. Ic. Fl. Germ. VIII. 40. t. 303. Boeck. Linnaea. XXXVI. 703. Clarke Fl. Brit. Ind. VI. 657. *S. muticus,* Don. Prodr. 41. *S. triangulatus,* Roxb. Fl. Ind. I. 217. Nees. in Wight. Contrib. 111. *S. javanus,* Nees. l.c. 112. *S. sundanus,* Miq. Fl. Ind. Bat. III. 304.

Singapore (Kurz 2996), Chan Chu Kang (Ridley 1723), Thompson Road (Murton); Malacca (Griffith 6258); Pahang: Pekan (Ridley 1210); Selangor: Klang, Kuala Lumpur (Ridley), Negri Sembilan, Seremban; Perak: Taiping; Penang: Pulau Betong (Curtis 1962). Distrib. Europe, African Islands, Indo-Malaya and Polynesia. Very common in ponds and ditches.

2. S. SUPINUS, Linn. Sp. Pl. 73. (partly). Stems slender or very slender solitary or tufted 6-12 inches tall. Leaves narrow short ¼ the length. Spikelets few in a single lateral head ¼- inch long. Bracts 1-3 inches long very narrow. Glumes ovate keeled with an erect mucro. Bristles 0. Nut obovoid, trigonous strongly wrinkled black. Roxb. Fl. Ind. I. 217. Boeck. Linnaea. XXXVI. 699 (excl. B. & J.). Clarke Fl. Brit. Ind. VI. 655. *S. melanospermus,* A. C. Meyer Cyp. Nov. t. 2. *Isolepis supina,* Br. Prod. 221. Nees. Wight. Contrib. 107. Miq. Fl. Ind. Bat. III. 300. *Schoenus junceus,* Willd. Phyto. I. 2. t. 1. fig. 4.

Province Wellesley: Permatang Bertam in rice-fields (Ridley). Distrib. Tropics of Old World and America.

3. S. ERECTUS, Poir. Encyc. VI. 761. Stems solitary or tufted slender or very slender 6-24 inches long. Leaves few or reduced to sheaths. Spikelets solitary or 4-6 in a cluster ¼ to 1 inch long conic or cylindric. Bract narrow linear acuminate 1-3 inches long erect like a continuation of the stem. Glumes rounded ovate not keeled. Bristles 6-5 rarely absent. Style bifid or trifid. Nut broadly obovoid flattened slightly plano-convex yellowish or black. Clarke Fl. Brit. Ind. VI. 656. *Sc. debilis,* Pursh. Fl. Ann. Sept. I. 55. Benth. Fl.

Austral. VII. 232. *S. juncoides,* Roxb. Fl. Ind. I. 261. Miq. Fl. Ind. Bat. III. 303. *S. luzonensis,* Presl. Rel. Haenk. I. 193. Nees. in Wight. Contrib. 112. *S. Wallichii,* Nees. in Wight. Contrib. 112. *S. junciformis,* Nees. l.c. 112 (not of Retz.). *S. timorensis,* Kunth. Enum. 162. *S. supinus,* var. B. Boeck. Linnaea. XXXVI. 600. *Eleocharis juncoides,* Roem. & Schultes Syst. Mant. II. 90.

Malacca: Selandor, Bukit Sabukor (Derry 276); Negri Sembilan: Kuala Pedas (Ridley 10070); Pahang: Temerloh (Ridley); Province Wellesley: Permatang Bertam (Ridley); Penang: Waterfall (Curtis 2178, 1904); Perak (Kunstler 1948). Distrib. Temperate and Tropical Asia, Australia and North America. Native name "Rumput Prut Tikus." Rice-fields.

9. Fuirena, Rottb.

Herbs annual or perennial usually pubescent. Stems leafy. Leaf sheaths entire with an annual membrane at the mouth. Spikelets sessile in close axillary peduncled or terminal clusters. Glumes numerous imbricate spirally keeled and cuspidate or mucronate. Hypogynous bristles 3 or 0. Hypogynous scales spathulate or quadrate clawed with 3 stout nerves. Style trifid slender. Nut trigonous narrowed into a stalk below and beaked above.

Species 26. Warm regions of both hemispheres.

Perennial, with a rhizome	1. *F. umbellata.*
Annual, no rhizome	2. *F. glomerata.*

1. F. umbellata, Rottb. Descr. & Ic. 70. t. 19. fig. 2. Rhizome creeping woody short. Stems 2-3 feet long trigonous usually moderately stout leafy. Leaves distant linear acute 4-8 inches long by $\frac{1}{2}$-$\frac{3}{4}$ inch wide sheaths dilate. Umbles axillary and terminal hairy 2 inches or less long. Spikelets crowded in dense heads 13 or more in a head, or fewer. Glumes oblong ovate blunt hairy with a recurved mucro. Hypogenous scales chestnut oblong spathulate with a central tooth, ribbed longer than the nut. Nut obovate trigonous beaked yellowish. Boeck. Linnaea. XXXVII. 110. Clarke Fl. Brit. Ind. VI. 666. Trim. Fl. Ceyl. V. 80. *F. paniculata,* Lam. Ill. I. 150. t. 39. *F. pentagona,* Nees. in Wight. Contrib. 93. *F. quinquangularis,* Hassk. Flora XXV. Beibl. 3.

Singapore Gardens, Macpherson Road (Ridley 9145), Bukit Mandai (1722); Johor: Kuala Tebing Tinggi (Ridley); Malacca (Griffith). Ayer Keroh (Ridley); Negri Sembilan: Seremban (Ridley 9995), Bukit Sulu (Cantley's Coll.); Selangor: Kuala Lumpur (Ridley); Penang Waterfall (Curtis). Distrib. tropics of both hemispheres. Common in ditches. Native names "Rumput Kelulut," "Rumput Buku Buloh," "Rumput Lidah Munkarong."

2. F. GLOMERATA, Lam. Ill. I. 150. Annual hairy, no rhizome. Stems 4 to 16 inches tall. Leaves narrow linear acuminate 1-3 inches long $\frac{1}{8}$ inch wide. Spikelets in 1 to 3, clusters of 3 to 10, $\frac{1}{4}$ inch long. Glumes obovate oblong with a stout hairy mucro. Bracts usually short $\frac{1}{2}$ to 1 inch. Hypogynous scales clawed with a broad quadrate, cordate limb with 3 ribs brown glabrous or nearly so, as long as the nut. Style trifid. Nut triquetrous rather long stalked with a small cylindric beak. Miq. Fl. Ind. Bat. III. 328. Boeck. Linnaea. XXXVII. 107. Clarke Fl. Brit. Ind. VI. 666. Trimen. Fl. Ceyl. V. 79. *F. canescens,* Vahl. Enum. II. 385. *F. ciliaris,* Roxb. Fl. Ind. I. 180. *F. Rottboellii,* Nees. Wight. Contrib. 94. Miq. Fl. Ind. Bat. III. 329. *Scirpus ciliaris,* Linn. Mant. 182. Rottb. Descr. & Ic. 55. t. 17. f. 1. *S. pilosus,* Retz. Obs. VI.19 (not Thunb). *S. aristatus,* Willd. Sp. Pl. I. 300.

Perak (Kunstler 2451); Province Wellesley: Permatang Bertam (Ridley 7009); Lankawi (Ridley). Distrib. Tropics of the Old World. Occurs in rice-fields.

10. LIPOCARPHA, Br.

Glabrous plants with stout or no rhizome. Stems leafy only at the base, bearing a single terminal head of few spikelets. Glumes numerous narrow. Flowers with 2 elliptic transparent scales as long as the nut enclosing it. Stamens 3 to 1. Anthers small not crested. Style small and slender, shortly bifid (rarely trifid). Nut small oblong cylindric or ovoid plano-convex reticulated black or yellow.

Species 15. All warm regions, most in Africa.

Spikelets white, glumes spathulate acute .. 1. *L. argentea.*
Spikelets green, glumes artistate .. .. 2. *L. microcephala.*

1. L. ARGENTEA, A. Br. Appendix to Tuckey's voyage to Congo, 459. Tufted or solitary stemmed plant. Leaves at the base and for about $\frac{1}{3}$ of the stem 4-10 inches long $\frac{1}{6}$ inch or less wide at base acuminate. Stems 18-24 inches long terete. Head of 1 to 8 oblong obtuse white spikelets $\frac{1}{4}$-$\frac{1}{3}$ inch long. Bracts narrow 4 inches long or less. Glumes oblong spathulate narrow, tip short acute, white with a green central line. Style trifid. Scales lanceolate acute as long as style. Nut cylindric straight reticulate yellow. Boeck. Linnaea. XXXVII. 114 (excl. American specimens). Clarke Fl. Brit. Ind. VI. 667. Trim. Fl. Ceyl. V. 81. *L. laevigata,* Nees. Wight. Contrib. 92. *Hypoelyptum argenteum,* Vahl. Enum. II. 283. *Tunga laevigata,* Roxb. Fl. Ind. I. 183. *Kyllinga albescens,* Steud. Syn. Cyp. 68. Miq. Fl. Ind. Bat. III. 294.

Singapore (Kurz 3020), (Kunstler 109), Tanglin (Ridley 58); Johor: Tana Merah Johor (Ridley); Malacca: Ayer Panas (Goodenough); Negri Sembilan: Bukit Sulu (Cantley's Coll.); Penang

Waterfall (Curtis 1807). Distrib. Tropics of Old World. Very common in damp spots all over the peninsula. "Rumput Rotan."

2. L. MICROCEPHALA, Kunth. Enum. II. 268. Stems very slender 4-24 inches tall. Leaves narrow ½ to ⅓ of their length. Spikelets 3 or 4 in a head ⅛ to ¼ inch long lengthening as the flowers develope and fall off, oblong obtuse green. Bracts linear acuminate 2 inches or less. Glumes narrow acuminate with a long recurved point. Scales very thin closely embracing the long curved cylindrical nut. Style arms short. Boeck. Linnaea. XXXVII. 118. Debeaux. Flor. Tchefou 146. t. 3. f. 1. Clarke Fl. Brit. Ind. VI. 668. *L. Zollingeriana,* Boeck. Flora XLII. 100. *Hypoelyptum microcephalum,* Br. Prodr. 220. *Ascolepis Kyllingioides,* Steud. Syn. Cyp. 105.

Singapore: Bukit Timah, Galang (Ridley 10354); Chan Chu Kang (1722), Bukit Mandai (5807). Distrib. China, Japan, Australia. Often plentiful in sandy open spots, but local.

11. RYNCHOSPORA, Vahl.

Herbs usually tall and leafy throughout, or rarely at the base only. Leaves narrow. Spikelets small terete ovoid, light brown, capitate corumbose or panicled. Glumes imbricate spirally lower 3 or 4 empty, 1 or 2 above bisexual, uppermost empty. Hypogynous bristles absent or 6, scabrid. Stamens 1 to 3. Style bifid slender with a broad persistent conic base. Nut biconvex turgid ovoid.

Species 188. All tropical and temperate regions.

Stem leafy at the base only, spikelets capitate	1. *R. Wallichiana.*
Stem leafy to the top.	
Spikelets in globose heads	2. *R. malasica.*
Spikelets in axillary and terminal corymbs.	
Corymbs large. Style and stigmas short	3. *R. aurea.*
Corymbs small. Stigmas long	4. *R. glauca.*

1. R. WALLICHIANA, Kunth. Enum. II. 289. Rhizome stout, roots strongly and wiry. Leaves at the base of the stem only, 3-24 inches long narrow linear acuminate numerous. Stem triangular 8-30 inches tall. Flowers in a single terminal compact head of spikelets ½ inch through. Bracts linear acuminate 1-4 inches long. Spikelets numerous glabrous light reddish brown. Glumes lowest 2 short, upper ones lanceolate smooth not ribbed acute with a low keel, 6-7 in a spikelet, subdistichous only 1 fertile. Style bifid. Stamens 2 crested. Bristles shorter than the nut 6 scabrid red. Nut obovoid flattened biconvex ¼ length of the glume, stalked with a small blunt conic boss on the top, black and covered above with short bristles. Benth. Fl. Hongkong Fl. Austral. VI. 349. Boeck. Linnaea. XXXVII. 542. Clarke Fl. Brit. Ind. VI. 668. *R. Haenkei,* Presl.

Rel. Haenk. I. 199. *Schoenus ruber,* Lour. Fl. Cochinch. I. 52. *Morisia Wallichii,* Nees. in Edinb. New Phil. Journ. 1834, 265. Wight. Contrib. 115. *Haplostylis Meyenii,* Nees. Linnaea. IX. (1834), 295. Wight. Contrib. 115 (partly). *Sphoeroschoenus Wallichii,* Arnott & Nees. Nov. Act. Acad. Nat. Cur. XIX. Suppl. I. 97. *Cephaloschoenus parvus,* Nees. l.c. 100. *Mariscus umbellatus* var. *procerior,* Zoll. Verz. Ind. Arch. II. 63.

Singapore: Jurong (Ridley 1725b), Seletar (1725c); Malacca (Griffith), Bukit Bruang (Ridley 3533), Alor Gajah; Pahang: Kuala Pahang (Ridley 1725). Distrib. Tropics of the Old World. Common in dry open country among bracken.

2. R. MALASICA, Clarke Fl. Brit. Ind. VI. 670. Stems rather stout 1½ to 2 feet tall, leafy to near the top. Leaves rather flaccid 12 inches or more by ¼ inch wide. Spikelets in a terminal spike of about 5 sessile heads ½ inch across, with a single long leafy bract to each. Glumes pale brown acuminate. Style slender branches 2 very short, base conic. Bristles very slender twice as long as the nut. Nut obovoid stalked biconvex dark chestnut brown shining smooth obscurely transversely barred beak short conic.

Singapore: Bedok (Ridley 5792), Bukit Mandai (80); Johor: Kota Tinggi (Ridley); Malacca (Griffith 6358), Ayer Keroh (Ridley). Distrib. Borneo. In grassy swamps local.

3. R. AUREA, Vahl. Enum. II. 229. Stems stout 2-3 feet tall leafy for their whole length subtriquetrous, scabrid on the edges. Corymbs axillary and terminal usually peduncled, several on each stem. Spikelets ¼ inch long in clusters of 3 to 5 on the ends of the ultimate branchlets of the corymbs. Glumes 7 or fewer, lower ones short empty. Uppermost male only or empty lanceolate acute 5th fertile ovate lanceolate acute brown. Bristles 6 white scabrid longer than the nut. Style very long. Nut obovoid truncate, with a very large conic yellow beak longer than the nut and uppermost glume. Benth. Fl. Hongkong 396. Fl. Austral. VII. 349. Miq. Fl. Ind. Bat. III. 336. Boeck. Linnaea. XXXVII. 626. Clarke Fl. Brit. Ind. VI. 670. Trim. Fl. Ceyl. V. 83. *R. articulata,* R. & B. Syst. Mant. II. 49. Miq. l.c. 337. *Scirpus corymbosus,* Linn. Amoen. Acad. IV. 303. *Schoenus articulatus,* Roxb. Fl. Ind. I. 184. *S. surinamensis,* Rottb. Descr. & Ic. 68. t. 21. fig. 1. *Calyptrostylis florida,* Nees. Mart. Braz. Cyp. 138. t. 13. *Cephaloschoenus articulatus,* Nees. Edinb. New Phil. Journ. 1834, 266. Wight. Contrib. 115. Common over the whole peninsula.

Singapore: Tanglin, etc. (Cantley, Hullett, Kurz 3006), (Kunstler 131) etc.; Malacca: Bukit Bruang (Derry 408), (Gaudichaud 93); Pahang: Pekan (Ridley); Selangor: Kuala Lumpur; Penang (Wallich 3424), (Curtis 1256); Province Wellesley: Legeh Tomoh

(Machado). Distrib. All the tropics. Abundant in open wet ground. "Rumput Sendayan" and "Sunayan."

4. R. GLAUCA, Vahl. Enum. II. 233. var. *chinensis,* Clarke Fl. Brit. Ind. VI. 672. Rhizome short and thick woody. Stems all over 2 feet moderately stout or slender, leafy to the top. Leaves 8-10 inches long $\frac{1}{10}$-$\frac{1}{8}$ inch wide linear acuminate. Corymbs small axillary and terminal $\frac{1}{2}$ inch or more long lax. Spikelets $\frac{1}{4}$ inch long, or less clustered. Glumes red brown acute keeled 6 or 7 ovate cuspidate. Bristles short scabrid. Style branches long slender. Nut obovoid biconvex brown slightly transversely wrinkled, beak conic broader than the truncate top of the nut and about $\frac{3}{4}$ of its length. Trim. Fl. Ceyl. V. 86. *R. chinensis,* Boeck. l.c. 586. *R. glauca,* Boeck l.c. 585 (partly). *R. lavarum,* Hook. & Arn. Bot. Beechey. Voy. 98 (not Gaudichaud). *R. laxa,* Thwaites Enum. 352 (not of Vahl).

Singapore: Balestier Plain (Ridley 9144), Changi (1722), Blakan Mati (5791). Distrib. Ceylon, Tenasserim, Madagascar, Carimon Islands, Borneo, China and Sandwich Islands. Typical. *R. glauca,* occurs in Africa, Japan, Australia and the Tropics of the New World. The plant grows in sandy spots generally near the sea.

12. ACTINOSCHOENUS, Benth.

Glabrous herbs, stems numerous crowded on a short rhizome very slender filiform. Leaves very narrow few. Spikelets small narrow sessile in a single terminal globose head. Glumes 4 to 8 distichous, upper ones mucronate with a long point, 1 to 3 bisexual. Hypogynous bristles absent. Anthers 3. Style trifid or bifid. Nut obovoid trigonous papillose or smooth.

Species 7 Asiatic.

A. FILIFORMIS, Benth. Ic. Pl. XIV. 33. t. 1346. var. *chinensis.* Rhizome very short, roots long and wiry. Leaves few to about $\frac{1}{2}$ length of the stem very narrow linear. Stems numerous weak slender 8-18 inches or more. Spikelets in a small dense head about $\frac{1}{4}$ inch through. Glumes 4-6 lanceolate acuminate brown with a stout 3 ribbed green keel ending in a long recurved mucro. Flowers usually 1 only perfect, lowest glumes empty. Style trifid. Nut obovoid trigonous small pale smooth. *Arthrostylis filiformis,* Thw. Enum. 352. Boeck. Linnaea. XXXVI. 524. *Arthrostylis chinensis,* Benth. Fl. Hongkong 397. *Fimbristylis actinoschoenus,* Clarke Fl. Brit. Ind. VI. 651.

Perak (Wray 354), (Kunstler 3373), Taiping Waterfall Rocks (Ridley); Malacca: Mount Ophir (R. Derry 640); Penang: Government Hill (Curtis 1866); Kedah: Gunong Jerai (Ridley 5149); Perak top of Gunong Batu Putih (Wray 351). Distrib. Carimon, St. Barbe and Lingga Islands, Hongkong. Tropical form, Ceylon.

Occurs usually on rocks by streams, from 1000 to 7000 feet alt. but occasionally lower.

13. Schoenus, Linn.

Wiry herbs, stems leafy or not, leaves narrow wiry. Spikelets capitate or panicled. Glumes distichous 3 or more lower ones empty, 1 to 4 fertile, terminal ones empty. Hypogynous bristles present or not. Stamens 3. Style trifid, slender not constricted at the base nor enlarged below. Nut trigonous.

Species 60. Mostly Australian, with a few in the temperate Northern and Southern hemispheres.

Sch. calostachyus, Poir. Encycl. Suppl. II. 251. Rhizome woody horizontal. Stem 2½ feet tall wiry stiff leafy. Leaves many at the base, above distant on the stem, lower ones 6-8 inches, upper ones 3 inches or less, wiry narrow. Spikelets solitary in the axils of short upper leaves on pedicels slender ½ inch long or less cylindric conic ½ to nearly 1 inch long. Glumes brown about 10 acute, lowest 4 to 8 empty close fitting short upper 3 or 2 fertile, edges hairy. Bristles ½ as long as the nut white. Style trifid. Nut ovoid trigonous black sunk in the hollow of the zig-zig rachis. Benth. Fl. Austral VII. 368. Clarke Fl. Brit. Ind. VI. 673. *Choetospora calostachya,* Br. Prodr. 233. *Cyclocampe Waigouensis,* Steud. Syn. Cyp. 156. *Cycloscarpa Waigouensis,* Miq. Fl. Ind. Bat. III. 339.

Singapore: Changi (Ridley 1724); Pahang: Pekan (Ridley 1397). Distrib. Malay Islands and Australia and Polynesia. In sandy heaths, but it also grows on rocks above the Waterfall, on the Carimon isles.

14. Cladium, P. Brown.

Large perennial herbs, usually glabrous or the inflorescence hairy. Stems leafy or not. Leaves flat linear or distichous equitant sword-shaped. Spikelets panicled in clusters often sessile at the angles of the flexuous branches of the panicle, small brown. Glumes spirally imbricate, lowest 1-4 empty, 1 to 3 floriferous terminal ones male or empty. Hypogynous bristles small or none. Stamens 3 or 2. Style slender trifid base dilated fused with the top of the nut. Nut small, large or small pyramidal or button-shaped beak.

Species 44. Distribution the whole world.

Leaves terete	1. *C. glomeratum.*
Leaves flat narrow	2. *C. undulatum.*
Leaves broad sword-shaped distichous	3. *C. Maingayi.*

1. C. glomeratum, R. Br. Prod. 237. A stoloniferous plant, about 3 feet tall, with a few terete leaves as tall tips linear acute

$\frac{1}{6}$-$\frac{1}{4}$ inch through. Stem leafy to the lax slender panicle. Panicle about 8 inches long strict. Spikelets clustered 1 to 3, $\frac{1}{5}$-$\frac{1}{4}$ inch long brown. Glumes lanceolate keeled, glabrous. Flowers 2-4, but only one (rarely 2) nut produced. Style trifid with long slender branches. Bristles none. Nut as long as the glume oblong ellipsoid with a small blunt conic hairy beak, shining bright chestnut. Kunth. Enum. II. 304. Benth. Fl. Austral. VII. 404. Clarke Fl. Brit. Ind. VI. 675. *Chapelliera glomerata,* Nees. Schm. Pl. Preiss. II. 76. Miq. Ann. Mus. Lugd. Bat. II. 146. *Baumea rubiginosa* & *B. Brownei,* Boeck. Linnaea. XXXVIII. 241, 242.

Singapore: Swampy spots near the sea Changi (Ridley 5790). Rare. Distrib. China, Japan, Australia and New Zealand. The glumes in the Australian plant are villous on the edge but quite glabrous in the Singapore plant.

2. C. UNDULATUM, Thw. Enum. 353. Rhizome short and stout, the plant forming large tussocks. Leaves numerous wiry 6 inches to a foot long very narrow. Stems 18 inches to 2 feet long slender stiff. Panicle 5-6 inches long diffuse with long narrow leafy bracts. Spikelets in clusters of 2 to 5 from the angles of the zig-zag branches. cinnamon brown, lax. Glumes narrow lanceolate not distichous keeled acute, 2 lowest smaller empty. Bristles 6 hardly $\frac{1}{2}$ as long as the nut. Nut hardly $\frac{1}{20}$ inch long sessile ovoid brown, beak very small hairy. Clarke Fl. Brit. Ind. VI. 674. Trim. Fl. Ceyl. V. 86. *Lepidosperma ceylonicum,* Nees. Linnaea. XXXVIII. 232. *Tricostularia fimbristyloides,* Benth. Fl. Austral. VII. 383. *Carpha juncifformis,* Boeck. Linnaea. V. 38. 267.

Pahang: Pekan (Ridley 2) in sandy open country. Distrib. Ceylon, Labuan, Sumatra, Borneo, Australia.

3. C. MAINGAYI, Clarke Fl. Brit. Ind. VI. 674. Tufted plant with a short stout rhizome. Leaves at the base distichous sword-shaped bright green, acuminate 3 feet long by $\frac{3}{4}$-$\frac{1}{2}$ inch wide. Stem about 4 feet tall or more, with 1 or 2 leaves paniculate with numerous lax branches. Spikelets in small clusters peduncled from the angles of the sinuate branches deep brown ovoid. Glumes ovate subacute edges ciliate 2 or 3 lower ones sterile, 2-4 fertile. Bristles 6, hairy above. Style trifid. Nut trigonous turgid shortly stalked beak long pyramidal hairy.

Malacca: Mount Ophir (Griffith 6304), (Hullett 870), (Ridley 3140), (Cuming 2379), and other collectors. On wet rocks on Padang Batu, and Gunong Mering at an altitude of 3000 feet. Perak: Gunong Babu at 5000 feet alt. (Wray 3882). Only known localities in the peninsula, but it also (fide Clarke) grows in Celebes. The Malays gave the name of "Jeringu Laut" to it (lit. Sea *Acorus calamus*).

6. Fimbristylis, Vahl.

Herbs not or rarely shorter rhizomatous. Leaves at base only. Stems subterete. Inflorescence of one or more terminal umbelled or corymbose spikelets. Spikelets solitary or clustered many flowered. Glumes imbricate all round or the basal ones only distichous, (section *Abilgaardia*), lowest one or two empty, upper ones bisexual, terminal ones empty. Stamens three, or fewer, anthers not crested. Bristles absent. Style long terete or flattened stigmas 2 or 3, base dilated and constricted below the dilatation, quite deciduous. Nut obovoid trigonous usually stalked shortly apex with no knob.

Species 125, all tropical and subtropical regions. Lower glumes of spikelets not distichous.

§ 1. Eleocharoides. Stems bearing one spikelet only (or occasionally 2 or 3).

Style bifid, nut biconvex, or plano-convex.

Nut cylindric oblong, reticulate .. .. 1. *F. tetragona.*

Nut obovoid transversely wrinkled.

Spikes erect narrow.

Stems slender 6-12 inches. Nut with 5 ridges .. .. 2. *F. acuminata.*

Stems very slender 2-6 inches. Nut with 7 ridges .. .. .. 3. *F setacea.*

Spikelet oblong at an angle with the stem 4. *F. nutans.*

Nut obovoid smooth.

Spikelets oblong obtuse (1 to 3) .. .. 5. *F. polytrichoides.*

Spikelets (1-2) ovoid ½ inch long .. 6. *F. schoenoides.*

Style trifid.

Nut tubercled very small .. .. .. 7. *F. pauciflora.*

§ 2. Dichelostylis. Spikelets many, umbelled or congested. Lowest glumes spirally aranged. Style bifid flattened and often villous. Nut biconvex.

Spikelets solitary.

Nut obovoid longitudinal striate with transverse bars .. .. 8. *F. diphylla.*

Nut ovoid smooth reticulate.

Dwarf annual. Glumes mucronate squarrose .. .. 9. *F. aestivalis.*

Tall plant usually leafless .. .. 10. *F. ferruginea.*

Tall, leaves tufted stiff. Spikelets ½ inch long .. .. 11. *F. longispica.*

Tall or short leaves tufted stiff. Spikelets ¼ inch long .. .. 12. *F. spathacea.*

Spikelets clustered usually capitate.

Umbel reduced to a head, annual .. 13. *F. argentea.*

Umbel simple or compound. Rhizome stout .. .. 14. *F. sericea.*

§ 3. Trichelostylis. Spikelets usually numerous. Glumes not distichous. Style trifid not flattened glabrous. Nut more or less trigonous.

Spikelets all or mostly solitary.

Small annual. Spikelets few .. .. 15. *F. tenera.*

Tall plants spikelets numerous.

Spikelets subglobose. Nut tubercled.

Leaves narrow long. Spikelets ⅛ inch long .. .. 16. *F. nuliacea.*

Usually leafless. Spikelets ⅙ inch long 17. *F. globulosa.*

Spikelets narrow lanceolate very numerous.

Nut tubercled .. .. 18. *F. complanata.*

Nut trabeculate not tubercled .. .. 19. *F. asperrima.*

Spikelets clustered (occasionally solitary in 21).

Stems very slender, leaves very narrow 20. *F. leptoclada.*

Stems stout, leaves large stiff .. .. 21. *F. nigrobrunnea.*

§ 4. Abilgaardia. Spikelets solitary. Glumes at base distichous or subdistichous Upper ones spiral. Style trifid.

Nut obscurely warty .. .. 22. *F. fusca.*

§ 1. Eleocharoides.

1. F. tetragona, Br. Prod. 226. A tufted plant 6-24 inches tall, with short narrow leaves, often reduced to sheaths nearly but sometimes 1½ inch long. Stems slender wiry. Spikelet solitary erect, conic dense ½-⅔ inch long broad. Glumes pale brown oblong rounded striate. Style linear bifid arms short villous to base. Nut narrow cylindric stalked half as long as the glume plano-convex straw coloured reticulate. Clarke Flor. Brit. Ind. VI. 631. Benth. Fl. Austral. VII. 305. Trim. Fl. Ceyl. V. 48. *F. cylindrocarpa,* Kunth. Enum. II. 222. Boeck. Linn. XXXVII. 7. Kurz. Journ. As. Soc. Beng. XXXIX. II. 85. *F. abjiciens,* Steud. Syn. Cyp. 107. Miq. Fl. Ind. Bat. III. 316. *F. Arnottii,* Thw. Enum. 348. *Mischospora efoliata,* Boeck. Flora XLIII. 113.

Singapore: Balestier Plain (Ridley); Pahang: Kuala Pahang (Ridley 1483). Distrib. India, Malaya, Australia. Sandy open country local.

2. F. ACUMINATA, Vahl. Enum. II. 285. Tuftd plant about 6 to 12 inches tall. Stems slender very numerous leafless with a tubular sheath with an acute or subacute point. Spikelet solitary terminal lanceolate fusiform acute pale, $\frac{1}{8}$ to $\frac{1}{4}$ inch long. Glumes oblong obtuse, keeled, and mucronate. Style bifid base broad above linear, arms very short. Nut short broad obovoid turbinate biconvex transversely wrinkled with about 5 thick ridges. Nees. Wight. Contrib. 96. Miq. Fl. Ind. Bat. II. 314. Boeck. Linnaea. XXXVII. 3. Clarke Fl. Brit. Ind. VI. 631. Trim. Fl. Ceyl. V. 48. *Facicularis,* Br. Prodr. 226. *Scirpus scaber,* Roxb. Fl. Ind. I. 220. *Eleogiton scabra,* Dietr. Sp. Pl. II. 99.

Singapore: Bukit Timah (Ridley 5855), Changi (1743), Bukit Mandai (5803); Pahang: Kuala Pahang (Ridley 1472); Malacca (Griffith 6295), Ayer Panas (Ridley 1654); Penang (Delessert, King, Diedrichsen 3558), Telok Bahang (Curtis 1869); Perak: Taiping (Ridley). Distrib. India, Malaya, Hongkong, Australia. Damp grassy spots.

3. F. SETACEA, Benth. Hook. Lond. Journ. Bot. II. 239. Small tufted plant 2-6 inches tall. Stems very slender wiry, leafless, except for two small tubular sheaths. Spikelet terminal lanceolate acute $\frac{1}{6}$ inch long. Glumes oblong obtuse keeled and mucronate, pale, with a green keel and often red patches on the side. Style bifid. Nut obovoid biconvex flattened with about 7 transverse wrinkles dark brown. Clarke Flor. Brit. Ind. VI. 632. *F. acuminata* var. *minor,* Miq. Fl. Ind. Bat. III. 314. Boeck. Linnaea. XXXVII. 4. *Isolepis cochleata,* Steud. Syn. Cyp. 100.

Singapore: Tanglin (Ridley 107), Galang (10829); Pahang: Kuala Pahang; Malacca: Chabau (Ridley 1011). Very near the preceding, but smaller and more slender. Nut a little smaller. Distrib. Burma, Malaya and Australia.

4. F. NUTANS, Vahl. Enum. II. 285. Large tufted plant 8 inches to a foot tall. Stems wiry slender nearly or quite leafless except for a tubular sheath or two at the base ribbed. Spikelet oblong or lanceolate acute usually bent at an angle with the top of the stem $\frac{1}{2}$ inch long. Glumes broad rounded with a low ribbed keel ending in a very short blunt mucro reddish. Style bifid broad villous at the top. Nut obovoid turbinate transversely wrinkled grey. Nees. Wight. Contrib. 96. Boeck. Linnaea. XXXVII. 5. Clarke Fl. Brit. Ind. VI. 632. Trim. Fl. Ceyl. V. 48. *Scirpus nutans,* Retz. Obs. IV. 12.

Singapore: Changi (Ridley 1741); Malacca: Ayer Keroh (Ridley 10758), Pulau Besar, Ayer Panas (1626), Malacca town (3536); Penang (Curtis 1868). Distrib. India, Borneo, China, Australia. Damp sandy spots.

5. F. POLYTRICHOIDES, Vahl. Enum. II. 248. Stems 8-12 inches tall slender wiry with brown sheaths at the base, upper ones cylindric truncate, with 2 very narrow leaf 1½-3 inches long. Spikelets 1 or 2, rarely 3, oblong obtuse, with a narrow longer leaflike bract ½ inch long. Spikelets ¼-⅓ inch long. Glumes oblong rounded obtuse, shortly mucronate keeled, red brown and mealy pubescent. Style broad linear villous brown bifid. Nut white ½ as long as the glume obovate biconvex smooth. Nees. Wight Contrib. 96. Clarke Fl. Brit. Ind. VI. 632. Trim. Fl. Ceyl. V. 49. *F. sub-bulbosa,* Boeck. Flora XLI. 598. *F. juncea,* Boeck. Linnaea. XXXVII. 4 (not of Roem & Schultes). *Scirpus polytrichoides,* Retz. Obs. IV. 11.

Singapore: Sungei Jurong (Ridley 8947), Galang (8399); Malacca (Griffith); Pahang: Pekan (Ridley); Penang (Wallich 3532). Distrib. India, Malaya, and Australia. In salt mud by the sea.

6. F. SCHOENOIDES, Vahl. Enum. II. 286. Stems tufted 4 to 12 inches tall rather slender and sometimes thickened at the base. Leaves very narrow as long or longer than the stem, but usually much shorter half as long. Spikelets 1 or 2 ovoid blunt pale ½-⅔ inch long. Glumes broad obtuse ovate keeled, ribbed. Style villous above bifid. Nut stalked ovate, pale brown ¼ the length of the glume biconvex. Nees. Wight. Contrib. 97. Boeck. Linnaea. XXXVII. 5 (part). Clarke Fl. Brit. Ind. VI. 634. Trim. Fl. Ceyl. V. 49. *F. bispicata,* Nees. l.c. 97. Boeck. l.c. 6 (partly). *F. inconstans,* Steud. Syn. Cyp. 107. *F. polymorpha,* var. *depauperata,* Boeck. in Flora LVIII. 111. *Scirpus schoenoides,* Retz. Obs. V. 14. *S. monostachyus,* Koen. Roxb. Fl. Ind. I. 219. Spreng. Neue. Entdeck. III. 11. *I. bispicata,* R. & S. Syst. Mant. II. 61. *I. rariflora,* Schrad. R. & S. l.c. 65. *Elcogiton monostachya,* Dietr. Sp. Pl. II. 97. *Abilgaardia nervosa,* Presl. Rel. Haenk. I. 180.

Singapore (Kurz); Malacca: Chabau (Ridley 10009), Ayer Panas (1686); Penang (King), Telok Bahang (Curtis 1822, 1870).

7. F. PAUCIFLORA, R. Br. Prod. 225. Stems very slender, forming large round tufts 6 to 12 inches across, 6-14 inches tall leafless, or occasionally with a leaf on one of the lower sheaths. Spikelet very small ⅛- inch long, green lanceolate acute. Glumes narrow lanceolate subacute few, 3 or 4 nut bearing. Style trifid narrowed upwards from a broad base, villous at the top. Nut obovoid white tubercled ⅓ the length of the glume. Clarke Fl. Brit. Ind. VI. 633. *F. filiformis,* Kunth. Enum. II. 221. Miq. Fl. Ind. Bat. III.

314. Boeck. Linnaea. XXXVII. 23. *F. pumila,* Benth. Hook. Lond. Journ. Bot. II. 239. Miq. l.c. 315. *F. malaccana,* Boeck. Flora XLI. 597. *Trichelostylis filiformis,* Nees. Wight. Contrib. 102.

Singapore (Wallich 3488), Pulau Tekong, Changi (Ridley 152), Gardens (No. 2); Johor: Tana Merah (Ridley); Pahang: Pekan (Ridley 1045); Negri Sembilan: Perhentian Tinggi (Ridley 10012); Malacca (Maingay), Ayer Panas (Ridley); Perak (Wray 772); Penang Waterfall (Curtis 1789); Dindings: Bruas (Curtis); Province Wellesley (King). Distrib. Mergui, Malaya, Australia and Oceania. Common all over the peninsula in damp grassy and sandy spots, especially on jungle paths, often completely covering them. The stems are erect in dryer spots, longer and prostrate in wetter ones. "Rumput Girah."

§ 2. Dichelostylis.

8. F. diphylla, Vahl. Enum. II. 289. A tufted plant with a very short or no rhizome. Stems 1 to 24 inches, 3-5 angled striate. Leaves linear obtuse or acute glabrous or hairy. Umbels 1 to 8 inches across, rays generally numerous. Bracts long leaflike. Spikelets ovoid, or oblong acute or obtuse -¼ inch long. Glumes ovate keeled sometimes mucronate chestnut or light brown glabrous, keel green. Stamens 3-2 or 1. Style flattened villous bifid, branches short. Nut half the length of the glume, obovoid shortly stalked yellowish or cinnamon brown, biconvex ribbed with small numerous transverse bars. Nees in Wight. Contrib. 100. Clarke Fl. Brit. Ind. VI. 626. *F. laxa,* Vahl. Enum. II. 292. *F. glauca,* Vahl. l.c. 288. *F. annua,* R. & S. Syst. II. 95, Mant. II. 55. *F. depauperata,* R. Br. Prodr. 227. *F. curvifolia,* Steud. Syn. Cyp. 116. *F. brachyphylla,* Schultes. R. & S. Syst. II. Mant. 530. *F. foliosa,* Link. Hort. Berol. I. 288. *F. cincta,* Nees. l.c. 98. *F. Royeniana,* Nees. l.c. 99. *F. ovalis,* Nees. l.c. 98. *F. podocarpa,* Nees. l.c.c. partly. *F. communis,* Kunth. Enum. II. 234. *F. metzii,* Steud. Syn. Cyp. 127. *F. similis,* Steud. l.c. 112. *F. spadicea,* Boeck. Flora XLII. 70. not Vahl. *F. pentastachya,* Boeck. l.c. XL. 36. *F. Heynei,* Boeck. Flora XLIII. 244. *F. polymorpha,* Boeck. Linnaea. l.c. 17. *Scirpus diphyllus,* Retz. Obs. V. 15. Roxb. Fl. Ind. I. 227. *S. miliaceus, brevifolius, arvensis, glomeratus,* Roxb. l.c. 224, 226, 227. *Trichelostylis curvifolia,* Nees. l.c. 105. *Isolepis curvifolia,* Schrad. R. & S. Syst. II. Mant. 70. A common weed all over the peninsula.

Singapore (Gaudichaud 117), Seletar (Ridley 70), Gardens (6); Johor: Tana Merah (Ridley); Pahang: Kuala Tembeling (Ridley); Malacca (Griffith 6322, 6345), Pulau Besar (Ridley); Selangor: Dusun Tua; Perak (Wray 604), Ipoh (Ridley); Penang Waterfall (Curtis).

var. *pluristriata,* Clarke l.c. p. 369. *F. pilosa* of most authors not of Vahl. *F. tomentosa,* of Vahl. Enum. II. 290. A tall plant, stems about 3 feet, leaves and sheaths especially roughly hairy, nut often more or less tubercular on the shoulders.

Singapore: Chua Chu Kang, Chasseriau Estate (Ridley). Distribution. All warm countries. Native name "Rumput Parah," "Rumput Purun Batu."

9. F. AESTIVALIS. Vahl. Enum. II. 288. Annual small tufted plant, 2-10 inches tall. Leaves about half the length of the stem or often less linear $\frac{1}{16}$-$\frac{1}{8}$ inch across pubescent or nearly glabrous. Stems strongly ribbed moderately slender. Umbel compound or decompound 1-2 inches across. Spikelets solitary yellow brown numerous oblong, subcylindric $\frac{1}{8}$ to $\frac{1}{4}$ inch long. Glumes narrow lanceolate strongly keeled and mucronate squarrose. Stamens 1-2. Style bifid slender. Nut obovoid smooth yellowish shining shortly stalked and beaked $\frac{1}{3}$ the length of the glume, reticulate, not ribbed. Nees. Wight. Contrib. 102. Boeck. Linnaea. XXXVII. 11. Clarke Fl. Brit. Ind. VI. 637. Trim. Fl. Ceyl. V. 51. *F. Griffithiana,* Steud. Syn. Cyp. 110. *F. dichotoma,* Boeck. Flora XLII. 70 (not Vahl.). *F. tricholepis,* Miq. Fl. Ind. Bat. III. 319. *F. Griffithii,* Boeck. Flora XLIII. 241. *Scirpus aestivalis,* Retz. Obs. IV. 12. Roxb. Fl. Ind. I. 207.

Singapore Gardens (Ridley 1739); Malacca (Griffith 6311); Pahang: Pekan and along the river as far as Kuala Tembeling, Rumpin River (Ridley 1268): Dindings "Isles Sambilang" Kampen hovener (probably Pulau Sembilan, Dindings). Distrib. India, China and Japan, Malaya and Australasia. Native name "Rumput Surai."

10. F. FERRUGINEA, Vahl. Enum. II. 291. Rhizome stout or hardly any. Stems 10 to 30 inches tall base thickened and covered with hard shining dark brown scales, above ribbed angled or flattened. Leaves usually none, occasionally occurring very narrow linear blunt, 4 to 6 inches long. Umbel simple or compound contracted, 1-3 inches long or 5 to 7 more rarely as many as 30 spikelets. Spikelets $\frac{1}{4}$-$\frac{1}{3}$ inch long oblong cylindric acute. Glumes broad rounded, mucronate, red brown finely pubescent. Style broadly linear villous. Nut small ovoid broad $\frac{1}{2}$ the length of the glume dark brown, very finely reticulated not ribbed. Delile Fl. Aegypt 10. t. 6. fig. 3. Nees. Wight. Contrib. 97. Boeck. Linnaea. XXXVII. 16. Clarke Fl. Brit. Ind. VI. 638. Trim. Fl. Ceyl. V. 53. *F. arvensis,* Vahl. Enum. II. 291. *F. marginata,* Labill. Sert. Austro-Caledon. II. t. 16. f. 1. *F. Roxburghii,* Dietr. Sp. Pl. II. 162. *F. trispicata* and *F. confinis,* Steud. Syn. Cyp. 107 and 115. *F. cyrtophylla,* Miq. Fl. Ind. Bat. III. 325. *F. ochreata,* Boeck. Flora XLI. 599. *F. andamanica,* Kurz. Andaman Rep. Appendix B. 21. *Scirpus ferrugineus,* L. Sp. Pl. 74. *S. arvensis,* Retz. Obs. IV. 11 (not Roxb.). *S. globulosus,* Roxb. Fl.

Ind. I. 217. *S. tristachyus,* Roxb. l.c. 221. *Schoenus polymorphus,* Roxb. Descr. & Ic. 67.

Singapore (Kurz), Pulau Boyan (Ridley 10423), Pulau Ubin (5806), Kranji, Chan Chu Kang, etc.; Johor: Tanjong Surat (Kelsall 1097); Malacca: Ayer Panas (Cantley's Coll.), (Griffith 6346); Penang (Diedrichsen); Kelantan: Kamposa (Ridley). Common in tidal mud. "Rumput Ruchut." The rhizome is very distinct and stout in the tidal mud plants.

11. F. LONGISPICA, Steud. Syn. Cyp. 118. Rhizome very stout. Stems crowded bases swollen with brown scale leaves, 18 inches to 2 feet tall rather stout. Leaves shorter 4-12 inches long $\frac{1}{8}$ inch wide blunt stiff. Umbel simple or compound 1-3 inches long. Bracts short. Spikelets solitary cylindric $\frac{1}{2}$ an inch long $\frac{1}{8}$ inch wide brown. Glumes broad oblong rounded strongly mucronate red brown, mucronate, mucro stout edges pubescent. Stamens 2. Style broad edge fimbriate bifid. Nut obovoid smooth reticulate, very shortly stalked. Miq. Fl. Ind. Bat. III. 325. Clarke Fl. Ind. VI. 639. *F. Buergeri* and *F. ferruginea,* Miq. Ann. Mus. Lugd. Bat. II. 144. *F. spadicea* var. *major,* Boeck. Linnaea. XXXVII. 20.

Pahang: Pekan to the Kuala (Ridley 1549, 1435) and Rumpin River. In open sandy plains. Distrib. China and Japan.

12. F. SPATHACEA, Roth. Nov. Pl. Sp. 24. Stems tufted stiff with dry brown sheaths at the base 4-20 inches long. Leaves short 3-8 inches long $\frac{1}{16}$-$\frac{1}{8}$ inch wide, glabrous. Umbels compound as much as 2 inches long in strong plants but often contracted into a small head. Bracts stiff $\frac{1}{4}$-$\frac{1}{2}$ inch long. Spikelets solitary numerous, small $\frac{1}{6}$-$\frac{1}{4}$ inch long brown oblong. Glumes rather broad ovate obtuse, margins pale scarious, keel low and mucro short, red brown. Stamens 2. Nut $\frac{2}{3}$ the length of the glume obovoid smooth or obscurely warty, yellowish brown. Style bifid. Clarke Fl. Brit. Ind. VI. 640. Trim. Fl. Ceyl. V. 54. *F. Wightiana,* Nees. Wight Contrib. 99. *F. glomerata,* Nees. Linnaea. IX. 290. Boeck. Linnaea. XXXVII. 47. *F. rigida,* Kunth. Enum. II. 231. *F. ciliolata,* Steud. Syn. Cyp. 100. *F. laevissima,* Steud. l.c. 117. *F junciformis,* Munro. Seem. Bot. Voy. Herald 422 (not of Kunth). *F. biumbellata,* Boeck. Flora XLI. 604. *Scirpus glomeratus,* Retz. Obs. IV. 11. *S. strictus,* Roxb. Fl. Ind. I. 226.

Singapore: Changi, Serangoon, Tanjong Ru (Ridley 5801); Johor near the town (Ridley); Malacca: Tanjong Kling (Ridley 3126); Pahang: Kuala Pahang, Cherating River (Ridley). Distrib. All over the tropics. Common in sand by the sea.

13. F. ARGENTEA, Vahl. Enum. II. 294. Small tufted plant 6 to 8 inches tall, bases covered with sheaths. Leaves very narrow

about ½ as long. Stems slender. Bracts narrow linear much longer than the umbel. Umbel reduced to a head ¼-½ inch across. Spikelets sessile 4-20 in a head cylindric light brown, ¼ inch long or less. Glumes rather narrow blunt keeled, silver grey or reddish, keel green. Stamen 1 or more. Nut very small obovoid biconvex, yellowish shining smooth. Nees. Wight. Contrib. 100. Boeck. Linnaea. XXXVII. 8. Clarke Fl. Brit. Ind. VI. 640. Trim. Fl. Ceyl. V. 52. *Scirpus argenteus,* Rottb. Descr. & Ic. 51. t. 17. fig. 6. Roxb. Fl. Ind. I. 223. *Scirpus monander,* Rottb. l.c. Ic. 50. t. 14. fig. 2 (not of Roxb.).

Kelantan: Kamposa (Ridley). Rare. Distrib. India and Ceylon.

14. F. SERICEA, Br. Prodr. 228. Rhizome stout woody descending or horizontal. Leaves 6 to 9 inches long ⅛ inch wide white silky crowded in tufts. Stems 4 to 16 inches tall stiff ribbed. Umbel simple or usually compound, rays about 3 inches long. Bracts short hairy. Spikelets crowded in heads on the ends of the rays 4 to 6 or more together broad oblong ¼ inch long. Glumes ovate hairy strongly keeled brown, edges scarious. Style bifid. Nut ⅓-⅕ length of glume obovoid smooth pale biconvex. Boeck. Linnaea. XXXVII. 22. Clarke Fl. Brit. Ind. VI. 641. *F. decora,* Nees. & Meyen. Wight. Contrib. 101. *F. dasyphylla,* Miq. Fl. Ind. Bat. III. 327. *F. velutina,* Franch. Bull. Soc. Bot. Franch. Bull. Soc. Bot. France XXVI. 87.

Johor East Coast: Jambu Larang (Feilding); Pahang: Pekan, Sungei Meang (Ridley 1522), Cherating River: Kelantan: Kamposa (Ridley). Distrib. India, China, Japan, Malaya, N. Australia. All up the east coast in sandy places.

§ 3. TRICHELOSTYLIS.

15. F. TENERA, R. & S. Syst. II. Mant. 57. var. *obtusata,* Clarke Fl. Brit. Ind. VI. 642. Small tufted plants, 4 to 7 inches tall with fibrous roots. Leaves short 1-2 inches long linear blunt, less than ⅛ inch wide spiral. Stems very slender erect with a simple umbel of 3 or 4 spikelets, 2 or more on short slender rays, central one sessile. Bracts glume like. Spikelets ⅛-¼ inch long lax, cylindric subacute. Glumes ovate yellowish or reddish, keel stout hardly mucronate glabrous. Style trifid slender. Nut ovoid ½ length of the glume yellow, minutely tuberculate hardly stalked. Boeck. Linnaea. XXXVII. 26. *Scirpus tenellus,* Roxb. Fl. Ind. I. 224. *Trichelostylis tenella,* Nees. Wight. Contrib. 103.

Singapore: Tanglin (Ridley 83), Jurong (1740), Bidadari (8430): Pahang: Kuala Pahang (Ridley 1740c): Malacca: Sungei Baru Ulu (Ridley 1740b): Penang: Telok Bahang (Curtis 1867).

Common in grass plots. The variety occurs in lower Bengal and Borneo also the typical *F. tenea* in Africa and a var. *oxylepis* in India.

16. F. MILIACEA, Vahl. Enum. II. 287. Tufted plant 12-24 inches tall. Leaves thin narrow acuminate ½ or nearly as long as the stems $\frac{1}{16}$ inch across. Stems slender bluntly trigonous umbel 2-4 inches long lax, decompound rays slender. Spikelets subglobose ⅛ inch long brown. Bracts narrow linear shorter. Glumes oblong obtuse broad chestnut with a green keel. Style short with 3 long branches. Nut ovoid warted with numerous transverse bars. Miq. Fl. Ind. Bat. III. 321. Boeck. Linnaea. XXXVII. 43. Clarke Fl. Brit. Ind. VI. 644. Trim. Fl. Ceyl. V. 56. *F. littoralis,* Gaud. Frey. C. Voy. Bot. 413. *F. Benghalensis,* Roem. & Schult. Syst. II. 94. Mant. 530. *F. flaccida,* Zoll. Syst. Verz. Ind. 22. t. 9. f. 2. Rottb. Descr. & Ic. 57. t. 5. f. 2. *S. tetragonus,* Poir Encycl. VI. 767. Roxb. Fl. Ind. I. 228. *S. benghalensis,* Pers. Syn. I 68. *Isolepis tetragona,* Nees. in Wight. Contrib. 103, 104.

Singapore (Gaudichaud 116), Chan Chu Kang (Ridley 1743); Johor: Tana Runto (Ridley); Pahang: Pekan, etc.; Malacca: Ayer Panas (Cantley's Coll.), (Griffith 6314); Perak: Ipoh (Ridley); Penang: Tanjong Bunga (Curtic 1792); Kelantan: Kamposa (Ridley). Distrib. Very common in damp spots all over the peninsula "Rumput Keladi" "Rumput Kerbau."

17. F. GLOBULOSA, Kunth. Enum. II. 231. Rhizome short but usually distinct in old plants. Stems 8 to 18 inches tall. Sheaths at the base often leafless or with longer short narrow leaves. Umbel 1-2 inches long with few suberect rays. Bracts very short erect ¼ to rarely ½ inch long acute ribbed. Spikelets globular to oblong $\frac{1}{6}$ inch long, solitary. Glumes ovoid obtuse, chestnut edge scarious keeled. Style trifid. Nut small ⅓ length of glume obovoid, subtrigonous thickly tubercled. Boeck. Linnaea. XXXVII. 45. Clarke Fl. Brit. Ind. VI. 645. Trim. Fl. Ceyl. V. 57. *F. umbellaris,* Vahl. Enum. II. 291. *F. efoliata,* Steud. Syn. Cyp. 109. *Scirpus umbellaris,* Lam. Ill. I. 141. *S. globulosus,* Retz. Obs. VI. 19. *Isolepis globulosa,* R. & S. Syst. II. 119. *Trichelostylis globulosa,* Nees. Wight. Contrib. 105.

Singapore (Wichura 695), Galang (Ridley); Johor: Base of Gunong Panti and Batu Pahat (Ridley 10994); Malacca: Bukit Sabukor (Derry 278), Ayer Panas (Goodenough 1687), (Griffith 6348); Pahang: Kuala Pahang, Pekan (Ridley 994); Penang (Wallich 3518), Waterfall (Curtis 1791). Distrib. India, China, Malaya.

Among forms of this common plant I have some with the umbel reduced to a single spikelet, and one with a number of narrow terminal empty or male glumes, making the spikelet lanceolate. This form I

have twice found in Johor (No. 10994). Native name "Rumput Sandang." Common in damp open grassy spots.

18. F. COMPLANATA, Link. Hort. Berol. I. 292. Rhizome short stout or none, leaves linear obtuse or praemorse 6-8 inches long $\frac{1}{3}$ to $\frac{1}{5}$ wide. Stem 8-24 inches tall, flattened. Umbel 1-4 inches compound, usually small. Bracts short and broad and blunt like the leaves. Spikelets $\frac{1}{8}$ inch long brown narrow acute. Glumes narrow lanceolate brown red with a strong green keel or mucro. Stamens 3. Style trifid. Nut small obovoid white tubercled, shining. Clarke Fl. Brit. Ind. VI. 646. *F. autumnalis,* var. Roth. Nov. Pl. Sp. 26. Boeck. Linnaea. XXXVII. 38. *F. scabra,* Kunth. Enum. II. 245. *F. Boeckeleri,* Steud. Syn. Cyp. 113 (partly). *Scirpus complanatus,* Retz. Obs. V. 14. Roxb. Fl. Ind. I. 228. *Sc. anceps,* Willd. Berl. Mag. II. 288. t. 8. f. 2. Roxb. l.c. 230. *Cyperus complanatatus,* Willd. Sp. Pl. I. 270. *Isolepis complanata* and *Willdenovii,* Roem. & Schult. Syst. II. 119, 120. *Trichelostylis complanata* and *scabra,* Nees. Wight. Contrib. 103.

Singapore: Chan Chu Kang (Ridley 5805), Balestier Plain, Tanglin, etc.: Malacca: Chabau (Ridley): Pahang: Kuala Tembeling (Ridley); Penang (King). Distrib. All warm regions.

19. F. ASPERRIMA, Boeck. Linnaea. XXXVII. 40. Rhizome stout and short. Plant usually large and tufted. Leaves numerous long, 18 inches or more often as long as the stem, $\frac{1}{6}$-$\frac{1}{4}$ inch across. Stems 18 to 24 feet or more. Umbel decompound 6 inches long or less with very numerous (often over 100) spikelets. Bracts usually long leafy. Spikelets fusiform acute brown $\frac{1}{8}$ inch long. Glumes rather narrow lanceolate keeled mucronate. Style trifid. Nut ellipsoid obovate, yellowish trabeculate, transversely, $\frac{1}{2}$ as long as the glume. Clarke Fl. Brit. Ind. VI. 643. Trim. Fl. Ceyl. V. 58. *F. chaetorrhiza,* Thwaites Enum. 349 (not Kunth.). *Isolepis dura,* Moritzi Verz. Zoll. Pl. 97. *Trichelostylis asperrima,* Nees. Mss.

Singapore: Upper Bukit Mandai (Ridley 5804); Johor: Gunong Panti: Sungei Ujong: Gunong Berumbun (Cantley's Coll.): Pahang: Tahan River (Ridley): Malacca: Merlimau (Derry 239), Tanjong Kling (Ridley), (Griffith 6349): Penang Hill (Curtis 2595, 1793); Perak (Wray 811, & 3523): Tomoh (Machado). Distrib. Ceylon, Tavoy, Siam. Common in woods. Native names "Rumput Siamet," "Rumput Pulut," "Rumput Bawang."

20. F. LEPTOCLADA, Benth. Fl. Hongkong 393 (not of Flora Austral.). A tufted plant, with very narrow linear leaves 6-8 inches long. Stems slender wiry 12-18 inches. Umbel small $\frac{1}{4}$-$\frac{1}{2}$ inch long, with 1 or 2 rays bearing a cluster of spikelets at the end, or reduced to a single cluster. Bracts shorter linear acuminate. Spikelets conic $\frac{1}{8}$ inch long dark brown. Glumes ovate brown keeled. Style bifid.

Nut obovoid yellowish brown thickly tubercled. Clarke Fl. Brit. Ind. VI. 647. Trim. Fl. Ceyl. V. 58. *F. retusa,* Thw. Enum. 349. Boeck. Linnaea. XXXVII. 46. Hance. Lond. Journ. Bot. XVI. 112.

Singapore: Changi (Ridley 1551b), Teluk Kurau (10448); Pahang near Pekan (Ridley 1551); Malacca (Griffith 6531). Distrib. Ceylon, China, Borneo. Abundant in dry spots in Singapore.

21. F. NIGROBRUNNEA, Thw. Enum. 434. Rhizome very short and stout, with unusually large roots. Leaves numerous 3-6 inches long $\frac{1}{8}$ inch wide stiff and blunt, bases scabrous on the edge. Stem 8 to 30 inches tall. Umbel simple compound or decompound. Bracts short $\frac{1}{2}$ inch long stiff. Spikelets crowded on the ends of 2 or 3 stout recurved rays sometimes all solitary $\frac{1}{2}$ inch long. Glumes dark brown few ranked or obscurely distichous, oblong keeled and shortly mucronate. Style trifid. Nut obovoid yellow brown warty or nearly smooth. Clarke Fl. Brit. Ind. VI. 648. Trim. Fl. Ceyl. V. 62. *F. subtetrastachya,* Boeck. Linnaea. XXXVII. 50. *F. pycnostachya,* Hance. Journ. Bot. XV. 338. *Abilgaardia Eragrostis,* Boeck. l.c. 55.

Kedah: Gunong Jerai (Ridley 5151), at 3000 feet elevation. Distrib. India and Cambodia.

§ 4. ABILGAARDIA.

22. F. FUSCA, Benth. Gen. Pl. III. 1048. Rhizome very short or none. Leaves about $\frac{1}{2}$ length of the stem very narrow linear. Stems 18 inches tall slender weak. Umbel of 4 or 5 rays slender about 1 inch long. Bracts very short. Spikelets solitary flattened $\frac{1}{4}$ inch long. Glumes acuminate mucronate brown pubescent. Stamens. Style trifid. Nut oblong or obovoid narrowed at the base three angled yellowish brown smooth very obscurely warty. Clarke Fl. Brit. Ind. VI. 649. *F. cinnamometorum,* Hance. Journ. Linn. Soc. XIII. 132. *F. Kampenhoeveneri,* Boeck. Engler. Bot. Jahrb. V. 505. *Gussonia pauciflora,* Brugn. Bot. Duperr. Voy. 171. t. 34. B. *Abilgaardia fusca,* Nees. Wight. Contrib. 95. Boeck. Linnaea. XXXVII. 54. *A. pauciflora,* Kunth. Enum. II. 249. *Schoenuspuberulus,* C. A. Meyer Cyp. Nov. 2. t. 1. *Rhynchospora anomala,* Steud. Syn. Cyp. 149. Miq. Fl. Ind. Bat. III. 337. *Isolepis longispica,* Steud. l.c. 104.

Singapore: Sandy fields Holland Road (Ridley); Penang: Government Hill (Kunstler 1690), (Curtis 2175).

15. LEPIDOSPERMA, Labill.

Stiff stoloniferous plants. Stems leafy at the base only. Panicle of many spikelets contracted. Spikelets of 5 to 10 glumes containing 2 to 3 axillary flowers, rarely producing more than one nut, the lowest flower always male. Glumes all similar. Hypogynous bristles 6,

ovate with a setaceous or triangular tip, very small. Stamens 3. Style trifid branches long, base glabrous fused into the nut. Nut smooth trigonous.

Species 36. All Australian except one.

L. CHINENSE, Nees. & Meyen. Linnaea. IX. 302. Nov. Act. Nat. Cur. XIX. (Suppl. I) 117. Rhizome short and stout, leaves terete 18-24 inches long, acute glaucous. Stem 3 feet or more terete glaucous panicle 3 to 4 inches long very dense. Spikelets $\frac{1}{8}$ inch long compact. Glumes blackish brown oblong truncate mucronate subdistichous. Bristles oblong with an acute point, broad, yellowish as long as the narrowed base of the nut. Style longer than the nut. Nut oblong trigonous narrowed at both ends yellow dotted with dark red. Benth. Fl. Hongkong 398. Boeck. Linnaea. XXXVIII. 329. Clarke Fl. Brit. Ind. VI. 676.

Malacca: Mount Ophir (Griffith 6115), (Ridley 3127). Distrib. South China. Very rare. In one spot by the stream on Padang Batu.

16. GAHNIA, J. R. & G. Forster.

Large coarse tufted plants. Leaves usually numerous and scabrid. Stems with nodes, bearing leaves or leaflike bracts to the top. Panicle dense spikelike or lax nodding. Spikelets clustered usually dark brown or black, 1 to 2 flowered upper one alone nut bearing. Glumes imbricated all round lower, 3 or more empty keeled, often mucronate and hispid upper ones larger, fertile glumes shorter blunt lowest male, uppermost empty, middle one nut bearing. Bristles 0. Stamens 3, filaments very long persistent holding the right nut. Style trifid, slender style base continuous, forming a small black cone on the top of the nut. Nut oblong narrowed a little at both ends trigonous or rounded, whitish yellow then red and sometimes finally black.

Species 27. Chiefly Australian, as far east as the Sandwich Islands, and west to Sumatra.

Panicle dense erect	1. *G. tristis.*
Panicle lax nodding	2. *G. javanica.*

1. G. TRISTIS, Nees. Linnaea. IX. (1832), 301. A large plant forming great leafy tussocks. Leaves narrow linear acuminate 2½-3 feet long, scabrid. Peduncle stout and stiff 2-3 feet tall. Panicle spiciform 18 inches long, of many to 17 or 18 dense black spikes of clusters 1-2 inches long. Bracts with a broad base as long linear acuminate very narrow limb. Spikelets in clusters of 3 or 4, $\frac{1}{8}$ inch long. Lowest glume short and broad, next 3 lanceolate acuminate much longer keeled, the keel running to the acute tip and making it triquetrous scabrid hispid. Upper 4 oblong obtuse glabrous much

shorter. Nut $\frac{1}{8}$ inch long broadly fusiform bluntly trigonous yellowish white with a small black conical tip eventually completely black. Nees. Hook. & Arn. Beechey. Voy. p. 228. Boeck. Linnaea. p. 354.

Singapore: Sungei Morai (Ridley 1723), Tanglin, Fort Siloso (91), (Hullett 54); Johor: Panchur (Ridley), Scudai River (1723a); Malacca: Mount Ophir (Ridley); Selangor: Kuala Lumpur (Ridley 5788); Perak: Dindings, Lumut (Ridley); Kedah: Gunong Jerai (Ridley). Distrib. Dutch Islands south of Singapore, Borneo and China. Common in dry spots near the sea and on river banks, and at 4000 feet altitude on some hills.

2. G. JAVANICA, Moritzi, Verz. Zoll. Pfl. 98. var. *penangensis,* Clarke l.c. 676. Large tufted plant, with long linear acuminate scabrid leaves, 3 or 4 feet long. Stems erect 8 to 12 feet tall stout. Panicle 18 to 24 inches long, lax nodding black branches very numerous 3-4 inches long or less. Bracts long linear from a broader base. Spikelets less than $\frac{1}{4}$ inch long. Lower glumes 3-4 blackish brown lanceolate very shortly mucronate, upper ones $\frac{2}{3}$ length or more blunt, not keeled. Stamens, with persistent filaments holding the nut when ripe. Nut oblong bluntly trigonous less than $\frac{1}{8}$ inch long, at first yellow, finally red shining. Boeck. Linnaea. XXXVIII. 339. *Phakellanthus multiflorus,* Zoll. Verz. Ind. Arch. II. 61. *Syzyganthus multiflorus,* Steud. Syn. Cyp. 153. *Schoenus paniculatus,* Hassk. Cat. Hort. Bogor. 296. *S. Hasskarli,* Steud. l.c. 166.

Johor: Bukit Murdom (Kelsall), Gunong Pulai, Pengaram Hill, Batu Pahat (Ridley); Malacca: Mount Ophir (Ridley 3142), (Griffith); Selangor: Bukit Hitam abundant (Ridley); Perak: Larut Hills (Curtis 2079), Gunong Batu Putih (Wray 387); Penang Hill (King 1750); Kedah: Gunong Jerai (Ridley). Distrib. Sumatra to New Caledonia and Fiji.

The type form (to which the synonymy belongs) differs in the closer panicle and longer lower bracts. The var. *penangensis* seems to be peculiar to the peninsula. It is common on the hills at an altitude of from 1500 feet to 4000 feet and is called by the Malays "Sereh Bukit."

17. REMIREA, Aublet.

Rhizome very long creeping, throwing short stems, leafy to the top. Leaves long rigid. Spikes capitate. Spikelets very densely crowded. Glumes 4, imbricating lowest ribbed, empty, uppermost enclosing a perfect flower. Bristles 0. Stamens 3 unilateral. Style slender trifid not dilated. Nut cylindric brown reticulated.

Species 1. All tropical seashores.

R. MARITIMA, Aubl. Pl. Guian. I. 45. t. 16. Stems 2 to 4 inches long. Leaves 1-6 inches long crowded $\frac{1}{6}$ inch wide, pungent. Head

of spikes sessile or peduncled, peduncle sometimes 2 inches long. Spikes ovoid about 4 in a head. Spikelets curved $\frac{1}{8}$ inch long. Nut $\frac{2}{3}$ length of glume. Beauv. Flor. D'Owar. II. 22. t. 73. Kurz. Journ. As. Soc. XLV. (1876) pt. II. 158. Boeck. Linnaea. XXXV. 435. Clarke Fl. Brit. Ind. VI. 677. *R. pedunculata,* Br. Prodr. 236. *R. Wightiana,* Nees. Wight. Contrib. 92. *R. distichophylla,* Boeck Flora XLI. 410. *Mariscus capitatus,* Zoll. Verz. Ind. Arch. II. 63. *Lipocarpha foliosa,* Miq. Fl. Ind. Bat. III. 337.

Singapore: Tanjong Katong (Ridley); Malacca (Griffith, Maingay); Pahang: Sungei Meang (Ridley 1521), Cherating River; Penang: Batu Feringhi (Curtis 1861); Lankawi Islands (Curtis). Common in sea sand.

18. Hypolytrum, L. C. Rich.

Tufted plants with usually a very short rhizome and broad leaves tapering to the apex and 3 nerved. Stems with one or two leaf bearing nodes, above the base. Spikes oblong, eventually subglobose, with fruit radiating in a stellate manner, panicled on the ends of the branches of the corymb, few or many. Bracts long and leafy. Spikelets small crowded consisting of one broad glume-like bracteole, within which 2 opposite hyaline boat-shaped glumes squamellae with 2 stamens with long filaments, anthers oblong not crested, and a subglobose ovary with a very shrot style with 2 long white branches. Nut tapering at both ends obovoid biconvex hardly distinctly beaked.

Species 25. All tropical regions.

Corymb large. Spikes very numerous.
Bracteoles not scarious.

Young spikes obovoid	1. *H. latifolium.*
Young spikes linear	2. *H. penangense.*
Spikes few. Bracteoles scarious ..	3. *H. proliferum.*

1. H. latifolium, Rich. in Pers. Syn. I. 70. A large tufted plant. Leaves numerous linear acuminate 3 nerved, 6 to inches long $\frac{1}{2}$ to 1 inch wide. Stem rather stout 1 to 3 feet tall, with 1 or 2 leaf bearing nodes. Corymb 3 to 6 inches across, compound dense or rather lax with somewhat scalrous rigid branches. Spikes usually very numerous solitary at first oblong globose stellate in fruit $\frac{1}{4}$ inch across. Bracts very long leaflike. Bracteole ovate broad subacute pale brown. Squamellae boatshaped acute, keel ciliate. Stamens 2. Ovary broad ovoid. Style arms long white. Nut obovoid pale dotted. with red glands eventually black $\frac{1}{16}$ inch long, tapering at both ends. Kurz. Journ. Roy. As. Soc. Beng. XXXVIII. 2, 72 (partly). Clarke Fl. Brit. Ind. VI. 678. Trim. Fl. Ceyl. V. 89. Bot. Mag. t. 6282. *H. giganteum,* Nees. Wight. Contrib. 93 (partly). Boeck.

Linnaea. XXXVIII. 131. *H. schoenoides,* Nees. Linnaea. IX. 288. *H. myrianthum,* Miq. Fl. Ind. Bat. III. 233. *H. latifolium* and *H. diandrum,* Dietr. Sp. Pl. II. 365. *Tunga diandra,* Retz. Obs. V. 15. *Albikkia scirpoides* and *schoenoides,* Presl. Rel. Haenk. I. 185. t. 34, 35.

Singapore (Kunstler 280), (Anderson 204), Tanglin, Jurong, Seletar (Ridley); Johor: Kuala Sembrong (Kelsall), Batu Pahat (Ridley), Pulau Dayong (Feilding Herb. H. B. Singap. 5795); Malacca (Griffith 6271), Tanjong Kling, Ayer Keroh (Ridley 10747), Ayer Panas (1579); Sungei Ujong: Gunong Berumbun (Cantley's Coll.); Pahang: Pekan (Ridley 1219); Selangor: Kuala Lumpur (Ridley 10402); Perak (Kunstler, Wray), Hermitage Hill (Ridley); Penang Hill (Hullett, Curtis 15, Ridley 9341). Distrib. India, China, Malay Islands, Australia and Polynesia. Common in woods in the low country. Native names "Giring-Giring," "Rumput Supiding," "Rumput Susat Belukar."

2. H. PENANGENSE, Clarke Fl. Brit. Ind. VI. 679. Stem stout, leaves long $\frac{1}{2}$ to $\frac{2}{3}$ inch broad. Panicle composed of 100 spikes, young spikes $\frac{1}{3}$ by $\frac{1}{20}$ inch linear cylindric.

Penang (Maingay 1720). I do not know this which is only known from a simple specimen in young flower, in Herb Kew. Is it an abnormal specimen of the preceding species?

3. H. PROLIFERUM, Boeck. Linnaea. XXXVII. 126. Rhizome very short. Leaves narrow 12-14 inches long $\frac{1}{8}$ to $\frac{1}{4}$ inch wide. Stem slender 9-18 inches long with 1 rarely more leaves above the base. Spikes 1 to about 20 together $\frac{1}{3}$ inch long, in 1 to 3 terminal clusters, with often a solitary one in the axil of a lower leaf. Bracts long and leaflike, much longer than the inflorescence. Bracteole pale brown edged with white ovate blunt. Squamellae boat-shaped keel ciliate longer than the ovary. Style short, arms long white. Nut obovoid acute stalked biconvex brown. Clarke Fl. Brit. Ind. VI. 679.

Singapore: Tanglin, Bukit Mandai and Seletar (Ridley 1716); Pahang: Sungei Chenei (Fox); Penang Hill (Ridley). Distrib. Carimon Isles, Borneo. In damp woods common in Singapore. There is noting "proliferous" about it as Boeckeler's name would imply.

19. THORACOSTACHYUM, Kurz.

Rhizome usually long. Leaves broad flat 3 nerved acuminate. Spikes panicled as in *Hypolytrum.* Bracts long leafy. Spikelets small. Squamellae 4. Stems 2 or 3. Style trifid. Nut bony shining black or brown, beak conic not distinct.

Species 2. Malayan.

Panicle small .. .. 1. *Th. bancanum.*
Panicle large, rays long, glumes pale .. 2. *Th. hypolytroides.*

1. Th. BANCANUM, Kurz. Tijdschr. Nat. Vereen. Ned. Ind. XXVII. 286. Bot. Zeit. XXIII. (1865) 204. Journ. As. Soc. Beng. XXXVIII. pt. II. 76. Rhizome rather stout. Leaves 18 inches long ¼-½ inch wide long acuminate pale, edges scabrous. Stem 2 feet tall triquetrous, smooth. Panicle 2-3 inches across, branches stiff strongly scabrid. Bracts very long leaflike 6 inches to 12 long. Spikes few or as many as 50, together in clusters of 2 or 3, on the ends of the branchlets usually pale ⅛ inch long. Bracteole ovate rounded smooth. Squamellae 4, two outer ones keeled, keel ciliate. Stamens 3. Ovary narrow cylindric. Style trifid. Nut narrowed at base, above acuminately beaked, beak chestnut brown or black shining, beak not distict from nut with 3 longitudinal grooves. Clarke Fl. Brit. Ind. VI. 680. *Lepironia bancana,* Miq. Fl. Ind. Bat. Suppl. 604. Ill. Fl. Arch. Ind. 63. *Hypolytrum bancanum,* Kurz. Journ As. Soc. Beng. XXXVIII. pt. II. 74. Miq. Ill. Fl. Arch. Ind. 59. *Mapania bancana,* Benth. and Hook. Gen. Pl. II. 1055.

Singapore (Wallich 340 part and 3404 part), Chan Chu Kang (Ridley 168), Chua Chu Kang (Ridley 1717), Changi (124); Johor: Sempang Kiri, Batu Pahat (Ridley 10996); Malacca (Griffith 6273, 6357), Ayer Keroh (Ridley 10754); Pahang: Pekan (Ridley 1105, 1063); Perak (Wray 3107). Distrib. Bangka, Borneo. In wet woods "Rumput Senayan Batu."

var. *longispica,* Clarke l.c. Spikes elongate cylindric ½ inch long. Due apparently to the attacks of an *Ustilago.*

Malacca (Griffith 6357), Bukit Bruang (Ridley 3534); Singapore: Kranji (Ridley).

2. Th. HYPOLYTROIDES, Clarke Fl. Brit. Ind. VI. 680. Stolons long and stout. Leaves 3 feet long 1 inch wide linear long acuminate edges scabrid. Stem taller, stout trigonous. Bracts very long leaflike. Panicle very large decompound, with stout spreading rays 6 inches long or more, branchlets scabrid. Spikes very numerous subglobose pallid solitary or in threes. Bracteoles rounded ovate pale dotted red. Squamellae 4, outer ones largest keeled ciliate on the edge red dotted. Stamens 3. Style trifid. *Hypolytrum Pandanophyllum* and *Pandanophyllum hypolytroides,* T. Muell. Fragm. Fl. Austr. IX. 16. *Mapania hypolytroides,* Benth. Fl. Austral. VII. 311. *M. pandanophyllum,* Schum and Hollr. Fl. Kaiser Wilhelmsland 25.

Johor: Kuala Kahang (Kelsall H. B. S. No. 4093); Malacca: Merlimau (R. Derry 1027), Sungei Udang (Ridley 1648). Distrib. New Guinea and Queensland. Wet swamp places in forests. Native names "Umbai," "Rumput Pandan Biru." Used for mat making.

20. Mapania, Aubl.

Stem short woody ascending often branched. Leaves numerous linear acuminate, with thorny edges, or petiolate linear oblong abruptly caudate, base sheathing. Scapes shorter than the leaves coriaceous sheaths at the base. Spikes solitary or as many as 20 in a head, conic or cylindric, bracteate. Bracteoles broad usually ribbed. Squamellae narrow, 2 narrowly boat-shaped keeled monandrous, 1 narrower monandrous 3 upper ones narrow hyaline empty or 1 enwrapping the style. Style filiform shortly trifid not dilated at the base. Nut usually large beaked.

Species 36. Assam, Ceylon, Malay Islands, South America.

Leaves linear acuminate.	
Spikes several in a head.	
Scape tall and stout, spikes 10-20	1. *M. palustris.*
Scape slender long, spikes 1-15 ovoid conic	2. *M. Kurzii.*
Scape long stout, spikes 0 cylindric long ..	3. *M. longispica.*
Scape short. Spikes ovoid 4	4. *M. valida.*
Spikes solitary.	
Scapes 1-2 feet long slender	5. *M. longa.*
Scapes 4-6 inches very slender	6. *M. tenuiscapa.*
Scapes usually very short and thick ..	7. *M. Wallichii.*
Leaves with a broad sheath at base a petiole, and broad limb abruptly cordate.	
Limb 20 times as long as broad	8. *M. humilis.*
Limb 3 to 4 times as long as broad ..	9. *M. triquetra*

1. M. palustris, Benth. Gen. Pl. III. 1070. Large tufted plant, rhizome stout ½ inch through and long. Leaves 4 foot or more long linear acuminate 1 inch wide, edges and keel scabrous, 3 nerved. Scape 6 inches to 18 inches long stout, with several sheaths at the base. Head of 10 to 30 spikes 1-2½ inch through. Spikes ½ inch long. Bracts at base broad ovate ribbed. Squamellae linear oblong, nearly as long as the bract. Nut subglobose rough black, swollen ⅛ inch long base narrowed, beak rather long. Clarke Fl. Brit. Ind. VI. 681. *Pandanophyllum palustre,* Boeck. Linnaea. XXXVII. 138. Kurz. Journ. As. Soc. Beng. XXXVIII. part 2, 78. (var. *malesica*) (not Hasskarl). *Lepironia palustris,* Miq. Ill. Fl. Arch. Ind. 63. t. 25.

Singapore: Bukit Timah, Pulau Ubin (Ridley 1715), Seletar (1712); Johor: Gunong Panti, Johor Bharu (Ridley 5794), Batu Pahat (11003); Malacca (Griffith); Pahang: Kuala Tenok, Tahan River (Ridley); Perak: Taiping near waterfall (Ridley): Dindings:

Lumut (Ridley 10317). Distrib. Native name "Mengkuang Tedong," "Mengkuang Lubo." Used for making mats and baskets. Inhabits dense forests (not swamps). The lowest bract below the inflorescence is often lanceolate, and in one specimen from the Dindings there is tubular sheath with a lanceolate limb ½ way up the scape 2½ inches long.

2. M. Kurzii, Clarke Fl. Brit. Ind. VI. 681. Large tufted plant with a thick rhizome. Leaves 4 feet long, ½-1 inch wide long acuminate, edges and keel very rough, scabrid. Scapes 4-18 inches long stout smooth. Spikes 1-15 in a head one inch across, cylindric acuminate ¾ inch long brown. Bracteoles ovate obtuse strongly ribbed. Squamellae rather longer outer ones strongly ciliate. Nut white narrowed at the base, beaked above ellipsoid (not ripe).

Malacca (Griffith 6356); Perak: Larut Hills (Curtis), (Ridley 11425); Penang: Government Hill (Maingay), (King), Tanjong Bunga (1820), Balik Pulau (Ridley 9410, 9339). Endemic. In forests at 1,000 feet alt.

3. M. longispica, Ridl. Journ. Roy. As. Soc. S. Br. XLIV. p. 205. Large tufted plant. Leaves linear 5 feet long 1 inch wide, gradually acuminate margins with close pale thorns. Scape stout over a foot tall with a head of 4 to 8 cylindric spikes. Bracts ovate acute ribbed ⅜ inch long. Spikes 1¼ inch long ¼ inch through cylindric. Bracteoles ovate obtuse ribbed down the back. Squamellae ⅜ inch long, fringed. Style trifid slender. Nut trigonoglobose endocarp hard black, ectocarp separable green.

Perak: Larut Hills (Ridley 11424) at an elevation of about 2,000 feet alt. Endemic. Allied to *M. Kurzii* but distinct in its large cylindric spikes, and stout scape. I am inhabited to Mr. Clarke for its examination and notes on this species.

4. M. valida, Ridl. l.c.c. Rhizome stout woody ⅜ inch thick. Leaves numerous, linear acuminate 2½ feet long ¾ inch wide edges roughly thorny point very long and slender, base of leaves shining dark brown. Scapes stout 4½ inches long with numerous sheaths at the base. Heads of 3 or 4 spikes oblong conic over ½ inch long. Bracts ovate ribbed ¼ inch long. Bracteoles ovate dark brown ribbed. Squamellae linear margins ciliate. Style trifid. Nut pear-shaped with a ridge at one side pale brown very small.

Singapore: Bukit Timah (Ridley 1714), Changi (Ridley 5798). Endemic. Allied to *M. Wallichii* but with longer slender peduncles 3 or 4 spikes in a head, and a different nut. One specimen from Bukit Timah (1714) has only a single spike in the head, but it is more usual to have 3 or 4. This is the plant referred to by Mr. Clarke (Fl. Brit. Ind. VI. p. 628) as *M. multispicata* Clarke, but in litt. he says now it is not that species.

5. M. LONGA, Clarke Fl. Brit. Ind. VI. 683. A large tufted plant with a long rhizome. Leaves 3-4 feet long ¾ inch wide linaer acuminate, edges aculeate for nearly the whole length, keel aculeate above. Scapes slender 10 to 25 inches long, with a few sheaths at the base. Head 1 rarely 2, ovoid ¾ inch long ½ inch wide in fruit. Bracts shorter than inflorescence ovate subacute ribbed green, margin thin. Squamellae nearly as long as the bracteoles.

Singapore: Seletar (Ridley 169, 6254). Distrib. Borneo. A large Pandanus-like plant growing in streams.

6. M. TENUISCAPA, Clarke Fl. Brit. Ind. VI. 683. Rhizome ¼ inch through woody. Leaves narrow linear acuminate, 3 feet long ⅜ inch wide with 4 nerves, edges and keel at tip aculeolate. Scapes 3-6 inches long with 4 or 5 sheaths at the base, base ½ inch long. Bracts brown ribbed, Squamellae 6, ¼-⅓ inch long nearly as long as the bracteole. Nut ovoid shortly beaked black. *P. andanophyllum,* Kurz. Journ. As. Soc. Beng. XXXVIII. part II. 81 (partly).

Johor: Kuala Sembrong (Kelsall, Ridley 4094), Sungei Tebrau (Ridley 11501); Malacca (Griffith 6299). Distrib. Sumatra and Borneo. In muddy forests by river banks.

7. M. WALLICHII, C. B. Clarke Fl. Brit. Ind. VI. 682. Stem short erect stout, woody, 2 inches long ½ inch through. Leaves long linear 3-4 feet long 2 inches across edges and keel above serrate very stiff. Inflorescence several very shortly (½ inch) peduncled, in flower fusiform ¾ inch long, in fruit conic 1 inch long ¾ inch through. Glumes ovate ribbed lower ones mucronate upper ones not mucronate narrower. Squamellae 6, narrow ¾ inch long, outer ones keeled ciliate at the tip inner ones linear hyaline. Style trifid white. Nut ¼ inch long ovoid turgid base narrowed to a short stalk. Beak short incurved. Kurz. Journ. As. Soc. Beng. XXXVIII. pt. II. 79 (not Hassk.).

Singapore (Wallich 3541), Bukit Timah (Ridley 11475). Distrib. Borneo.

A big tufted plant in dense forests. Young spikes are green with a darker edge conic when dry polished yellow, minutely dotted. Occasionally the peduncles are much longer and more slender, 6 to 8 inches long.

8. M. HUMILIS, Naves & Villar Blanco Fl. Filip. Append. 309. Stem short 2-3 inches long stout. Leaves equitant at base with broad sheaths over 1 inch across, passing into a petiole half as long as the suddenly dilated blade, blade oblong serrulate ending rather abruptly in a slender tail, 28 inches long 1 inch wide, tail 3-4 inches long. Scapes ½-12 inches long covered at the base with scales. Head fusiform when young, ovoid when full grown. Bracts shorter than the

head ovate broad brown with scarious margins. Bracteoles ovate obtuse ribbed. Squamellae 6 shorter narrow ⅝ inch long. Anthers white linear oblong. Style long pink trifid. Nut ¼ inch long, broadly fusiform oblique beak very short dusky scurfy brown. Clarke Fl. Brit. Ind. VI. 683. *M. lucida,* N. E. Br. Illustr. Hort. XXXII. 77. t. 557. *Pandanophyllum humile,* Hassk. Tijsch. Nat. Vereen. Ned. Ind. X. 119. Kurz. in Journ. As. Soc. Beng. XXXVIII. pt. II. 82. *P. zippelianum,* Kurz. in Tijdsch. Nat. Vereen. XXVII. 126. Bot. Zeit. XXIII. 204. *P. Wendlandi,* Gard. Chron. XXI. 1884, 711. *Lepironia cuspidata,* Miq. Fl. Ind. Bat. Suppl. 603. *L. humilis,* Miq. Ill. Fl. Arch. Ind. 61. t. 23.

Singapore: Bukit Timah (Ridley 6546), Kranji (1713); Johor: M. Castlewood (Ridley 9176); Negri Sembilan: Perhentian Tinggi (Ridley); Malacca (Griffith), (Hervey), Selandor (Cantley's Coll.); Selangor: Petaling; Perak: Larut Hills at 4000 feet (Curtis 2081), (King's Coll. 2554); Pahang: Tahan River; Penang (Curtis 287). Distrib. Borneo. Common in forests.

9. M. TRIQUETRA, Ridl. Stem ascending or erect, 6 inches long, triquetrous from the broad leaf sheaths 1½ inch long 1 inch wide green edged pink, petiole green 2-3 inches long blade oblong dark green above paler beneath base broad 6-8 inches long 2 inches wide ending abruptly in a tail 1½ inch long edges aculeate. Scape slender 3 inches long red. Head very small ½ inch long. Bracts shorter lanceolate red. Squamellae 6, 2 outer ones with ciliate keels. Stamens 3 white. Anthers twisted linear oblong. Style long stigmas 3 short.

Dindings: Lumut (Ridley); Pangkor (Scortechini); Negri Sembilan: Bukit Tumiang (Cantley's Coll.); Penang Hill (Curtis). Distrib. Borneo. In forests.

21. SCIRPODENDRON, Zipp.

Large coarse tufted plants resembling a pandanus, rhizome horizontal, stem very short. Leaves long linear narrow acuminate aculeolate. Inflorescence a head of spikes on a short peduncle hidden among the leaves. Bracts longer. Spikes dense, numerous. Bracteoles (glumes) large oblong coriaceous 1 or more flowered. Squamellae numerous 2 lateral broadest concave ciliate on keel monandrous, inner above 6. Stamens elongate. Anthers slender. Style slender, bifid. Nut large deeply grooved.

Species 1. Ceylon, Malay Islands, Australia, Samoa.

S. COSTATUM, Kurz. Journ. As. Soc. Beng. XXXVIII. pt. 2, 85. Rhizome rather slender with long roots. Leaves 10 feet long 1-1½ inch across, tail filiform scabrid 6 to 10 inches long. Inflorescence peduncle lengthening in fruit to a foot long. Spikes yellowish white ovoid. Bracts leaflike very long, lower ones 1 feet or less, upper bracts

white. Squamellae about ½ inch long. Fruiting spike often distinctly branched 6 inches long. Nut ½-⅔ inch long brown, ellipsoid grooved deeply and acute at both ends, epicarp fleshy seed globose. Clarke Fl. Brit. Ind. VI. Trimen. Fl. Ceyl. VI. 92. Miq. Ill. Fl. Arch. Ind. t. 28. *Pandanus pumilus,* Moon. Cat. 67. *Chionanthus Ghaeri,* Gaertn. Fruct. 1, 119.

Singapore: Kranji, Jurong, Changi (Ridley 3939); Johor: Kota Tinggi river bank, Sempang Kiri (Ridley). Native name "Selinsing." Very common along rivers near the sea.

22. Lepironia, L. C. Rich.

A rust-like plant with a creeping rhizome and tall leafless stems with a scale-like sheath at base. Spike simple cylindric lateral, oblong obtuse, with a terete bract appearing like the continuation of the stem. Bracteoles broad blunt. Squamellae 8 to 11 shorter outer ones 2 boat-shaped, keel siliate, monandrous the others narrower monandrous or empty. Style short bifid, arms slender. Nut ovoid beak compressed.

Species 1. Madagascar, Ceylon, Malay Islands, N. Australia, Fiji.

L. mucronata, Rich .Pers. Syn. 170. Rhizome woody covered with scales, with long roots. Stems terete 1 to 3 feet long transversely septate crowded. Spike ½- inch long ¼ inch through. Bracts 1-2 inches terete acuminate. Bracteoles chestnut brown, broad blunt not ribbed, spirally imbricating. Nut ovoid compressed beaked winged margins and beak ciliate. Miq. Ill. Fl. Arch. Ind. 60. t. 20. Kurz. Journ. As. Soc. Beng. XXXVIII. pt. II. 77. Boeck. Linnaea. XXXVII. 140. Goebel. Ann. Jard. Buitenz. VII. 126. t. 14. f. 12, 13. Clarke l.c. 684. *Scirpus coniferus,* Poir. Encyc. VI. 756. Suppl. V. 90. *Restio articulatus,* Retz. Obs. IV. 14. *Chondrachyne articulata,* Br. Prodr. 220. *Choricarpa aphylla,* Boeck. Flora XLI. 20.

Singapore (Lobb), Teban, Jurong (Ridley); Johor; Pahang: Sungei Chenei (Fox, Ridley 5009); Malacca (Griffith 6307); Dindings: Tanjong Hantu (Ridley 7263). In ponds on open swamps.

23. Scleria, Berg.

Perennial or annual rough herbs. Stems leafy. Leaves narrow, linear acuminate sometimes 3 nerved, scabrid, cutting, sheath triquetrous or winged. Panicle elongate, compound broad or narrow. Flowers unisexual. Spikelets unisexual, more rarely bisexual, with one female flower below, and several males above. Glumes 2-4 lower ones empty, 1 or more above floriferous. Stamens 3 to 1. Style trifid slender, not thickened at the base. Nut bony white or purple,

smooth or shining or reticulate or tubercled, sometimes hairy stipitate, with a disc often large fleshy, entire tooth or three lobed.

Species 150. All warm regions.

1. HYPOPORUM. Most of the spikelets bisexual.

Leaves narrow, panicle narrow	1. *S. lithosperma.*
Leaves broad, 3 nerved glabrous.	
Panicle large, corymbs several	2. *S. corymbosa.*
Panicle slender, corymbs few small ..	3. *S. Ridleyi.*
Leaves hairy, nut trigonous hairy	4. *S. trigonocarpa.*

2. EUSCLERIA. Spikelets unisexual.

Nut smooth.	
Tall stout plant, panicle large dense ..	5. *S. oryzoides.*
Slender weak plants.	
Nut ovoid	6. *S. zeylanica.*
Nut globose top flattened	7. *S. levis.*
Nut very small grooved	8. *S. Radula.*
Annual dwarf plant	9. *S. caricina.*
Nut reticulated velvety or pubescent.	
Panicles dense crowded at top of stem.	
Secondary bracts setaceous very long ..	10. *S. bancana.*
Panicles lax, sheaths not winged.	
Disc short 3 lobed	11. *S. multifoliata.*
Disc long cylindric crenulate red ..	12. *S. sumatrensis.*
Panicle slender lax, sheaths winged ..	13. *S. hebecarpa.*
Nut tessellate. Stout tall plants.	
Ligule ovate hairy	14. *S. elata.*
Ligule scarious brown	15. *S. chinensis.*
Nut tessellate small weak plant	16. *S. biflora.*
Nut very small tubercled	17. *S. necsii.*

1. S. LITHOSPERMA, Sw. Prodr. 18. Fl. Ind. Occid. 92. Rhizome short woody. Stems 18-24 inches tall slender tufted. Leaves narrow linear $\frac{1}{16}$ inch across 8- inches long. Sheaths pubescent, otherwise glabrous. Panicle narrow with slender branches 1-3 inches long with distant small spikelets or clusters of spikelets, many bisexual. Glumes dark brown acuminate. Nut $\frac{1}{10}$ inch long ovoid smooth white. Nees. Wight. Contrib. 117. Boeck. Linnaea. XXXVIII. 451. Kurz. Journ. As. Soc. XLV. pt. II. 159. Clarke Fl. Brit. Ind. VI. 685. Trim. Fl. Ceyl. V. 96. *S. tenuis,* Retz. Obs. IV. 13. Roxb. Fl. Ind.

III. 574. *S. Wightiana,* Steud. Syn. Cyp. 176. *Scirpus lithospermus,* L. Sp. Pl. (Ed. I) 51. *Schoenus lithospermus,* L. Sp. (Ed. II) 65. *Olyra orientalis,* Lour. Fl. Cochinch. II. 674. *Hypoporum lithospermum,* Nees. in Mart. Fl. Braz. Cyp. 172.

Pahang: Rumpin River, Kuala Pahang (Ridley 1461); Malacca (Griffith 6129), Nyalas (Goodenough 1299), Alor Gajah (Ridley); Negri Sembilan: Tampin Hill (Goodenough); Linggi River (Ridley); Dindings: Lumut (Ridley 10926, 3111); Penang (Wallich 3416), Waterfall (Curtis 1794). Distrib. All tropical regions except Africa. Inhabits dry woods.

var. *Roxburghii,* Clarke Fl. Brit. Ind. VI. 686. Trim. Fl. Ceyl. p. 96. Rather a shorter plant, with mucronate glumes and the nut globose are oblong trigonous, apiculate tubercled in waved ridges white.

Johor: Batu Pahat, Minyak Buku (Ridley 10995); Dindings: Lumut (Ridley 7261).

2. S. CORYMBOSA, Roxb. Fl. Ind. III. 574. A stout robust plant nearly glabrous with a short rhizome. Stems 2 to 8 feet tall with 3 angled or winged sheaths. Leaves 12-14 or 20 inches long $\frac{1}{2}$-1 inch wide smooth, except the scabrid edges or minutely hairy on the back. Panicle 18-24 inches long of 6 or 7 compoundly corymbose axillary partial panicles 3 inches or more long, branchlets rather stiff and spreading. Bracts spreading setaceous. Spikelets nearly $\frac{1}{4}$ inch long nearly all bisexual. Glumes pale, greenish or with chestnut sides. Style trifid. Nut ellipsoid narrowed at base, tip pointed, smooth and white $\frac{1}{8}$ inch long. Disc very short hardly 3 lobed brown. Clarke Fl. Brit. Ind. VI. 686. Trim. Fl. Ceyl. V. 95. *S. androgyna,* Nees. Linnaea. IX. 303 and in Wight. Contrib. 117. Boeck. Linnaea. XXXVIII. 536. *S. corymbifera,* Boeck. Linnaea. XXXVIII. 537. *S. majus,* Moon. Cat. Pl. Ceyl. 62.

Singapore: Bukit Timah (Ridley 10851); Johor: Gunong Panti (Ridley); Muar: Bukit Muar (Feilding); Malacca (Griffith), Ayer Keroh (Ridley 10746), Batang Malacca (Derry); Dindings: Telok Sera (Ridley 8557); Perak: Goping (King 1092); Selangor: Bukit Hitam at 4000 feet (Kelsall 1969); Penang (Curtis 490). Distrib. India and Ceylon. Damp spots by paths in forests local up to 4000 feet elevation. In the Singapore plant the lowest stem sheaths are strongly winged.

3. S. RIDLEYI, Clarke Fl. Brit. Ind. VI. 686. Stems 18 inches to 2 feet tall rather slender hardly trigonous. Leaves -12 inches long $\frac{3}{8}$ inch wide almost entirely glabrous. Panicle of about 4 partial panicles rather compact but distant from each other $1\frac{1}{2}$-2 inches long light brown, 8-30 spikelets in each. Nut ellipsoid beak a little longer than that of *S. corymbosa,* smooth white $\frac{1}{8}$ inch long.

Singapore: Changi (Ridley 2131); Dindings: Lumut (Ridley 10294). Distrib. Pulau Buru (Ridley 1641) Hongkong. In damp sandy spots rare. Pulau Buru is one of the Dutch Islands between Singapore and Sumatra.

4. S. TRIGONOCARPA, Ridl. Journ. Roy. As. Soc. S. Br. Stem stout over 2 feet tall. Leaves sheaths triquetrous not winged roughly hispid. Leaves not crowded long ½ inch across with 3 prominent ribs apex long acuminate scabrid, and pubescent beneath. Panicle rather narrow rough pubescent, partial panicles 1½ inch long. Spikelets brown mostly bisexual. Glumes keeled and mucronate in female flower, pubescent. Nut when young covered with ferruginous hairs, white smooth trigonous above acuminate to a broad triangular tip, disc short irregularly wrinkled yellowish.

Pahang: Tahan River (Ridley). Raub (Machado 11533). A few specimens obtained with the fruit hardly ripe. It is evidently allied closely to *Scl. corymbosa* Roxb. and *Scl. Ridleyi* with something of the habit of the latter, but much more hairy and with distinctly trigonous nut covered at first with ferruginous hairs. I obtained a much more slender and glabrous plant with quite similar spikelets at Gaya, British North Borneo (No. 9104 of my collection).

5. S. ORYZOIDES, Presl. Rel. Haenk. 1, 201. Stolons long, ⅕ inch through. Stems robust 3 to 6 feet tall glabrous, triquetrous. Leaves about 3 feet tall ½ inch wide scabrous, sheath acutely trigonous, or winged, no ligule. Panicle 6-8 inches long dense on a long 6 inches slender peduncle bract less except for the terminal leaf below the peduncle narrow linear acute. Spikelets solitary unisexual, on slender flexuous branches, some plants nearly entirely male. Female spikelets usually 2 or 1 at the base of the spikes. Male spikelets much more numerous. Glumes keeled and mucronate red brown. Style trifid. Nut globose white smooth ⅛ inch long hardly narrowed at the base, disc three lobed, short lobes appressed to the nut. Nees. Wight. Contrib. 116. Clarke Fl. Brit. Ind. VI. 691. Trim. Fl. Ceyl. V. 99. *S. latifolia,* Moon. Cat. Pl. Ceyl. 62. *S. orizoides,* Boeck. Linnaea. XXXVIII. 492

Singapore: Changi (Ridley 5808); Johor: Serom (Ridley 10998); Malacca (Griffith), Ching (Ridley); Perak: Trang (Kunstler). Distrib. East Africa, India, Malay Islands to N. Australia. Native name "Rumput Siku Dana." In ditches and rice-fields, abundant in Malacca.

6. S. ZEYLANICA, Poir. Encycl. VII. 3 (excl. part). Slender tufted plant, nearly or quite glabrous. Leaves thin 4 inches long ⅛ inch wide. Panicles axillary small of 1 or 2 spikes only. Spikelets small ⅛ inch long. Glumes brownish. Style trifid. Nut small ⅟₁₂ inch long white smooth egg-shaped. Nees. Wight. Contrib.

p. 118. Clarke Fl. Brit. Ind. VI. 687. Trim. Fl. Ceyl. V. 97. *S. ceylanica,* Kunth. Enum. II. 358. *S. Thwaitesiana,* Boeck. Linnaea. XXXVIII. 454. *S. lateriflora,* Boeck. 454. Kurz. Journ. As. Soc. Beng. XLV. pt. 2, 159.

Singapore: Galang, Changi (Ridley); Pahang: Kuala Pahang; Malacca: Ayer Panas (Ridley); Penang: Telok Bahang (Curtis 1907). Distrib. Ceylon, Nicobars, Tenasserim, Borneo, Amboyna. The peninsula plant seems to be usually quite glabrous, except the bracts.

7. S. LEVIS, Retz. Obs. IV. 13. Rhizome short woody roots tough. Stems triquetrous not winged rather slender 2-3 feet tall. Leaves linear acuminate 1 foot tall $\frac{1}{4}$ inch across. Panicle rather narrow, lower partial panicles small. Upper one subpyramidal brown or dark red. Nut smooth quite globose white or black almost flattened at the top, disc white fleshy with 3 ovate lobes, toothed at the tip. Clarke Fl. Brit. Ind. VI. 694. Trim. Fl. Ceyl. V. 100. *S. laevis,* Willd. Sp. Pl. IV. 314. Roxb. Fl. Ind. III. 575. Nees. Wight. Contrib. 117. Boeck. Linnaea. XXXVIII. 512. Kurz. Journ. As. Soc. Beng. XLV. part 2, 160.

Singapore: Changi (Ridley 5809), Tanglin, etc., very common; Johor: Tana Merah Road (Ridley 1719); Pahang: Pulau Tawar (Ridley 2143), Pekan (1477); Malacca: Pulau Besar (Griffith), Alor Gajah (Ridley); Penang (Wallich 3410 part). Distrib. India, Ceylon, Siam, Malay Islands, China. Common in grassy spots.

8. S. RADULA, Hance, in Ann. Sc. Nat. Ser. 4. XVIII. 232. Robust very slightly hairy, very scabrous. Partial panicles several peduncle pyramidal secondary bracts long setaceous conspicuous. Nuts smooth white, lobes of disc small ovate. Clarke l.c. 691. *S. laevis* var. *S. caberrima,* Benth. Pl. Hongkong 400. *S. aspera,* Boeck. Linnaea. XXXVIII. 483.

Perak at 300 feet (King's Coll. 1929). Distrib. Hongkong. (Not seen).

9. S. CARICINA, Benth. Fl. Austral. VII. 426. A small annual, very slender and weak 6 to 15 inches tall glabrous. Leaves linear acute 1-2 inches long $\frac{1}{10}$-$\frac{1}{8}$ inch wide, flaccid bright green, usually 3 nerved. Spikelets in very small axillary clusters $\frac{1}{8}$ inch long close, or remote, just emerging from the axils of the leaflike bracts, all unisexual. Female spikelets $\frac{1}{12}$ inch long pale green, with 1 or 2 males at the base. Glumes 4 upper ones three lobed, stigmas 3. Nut minute white 3 ribbed, and cancellate between the ribs. Clarke Fl. Brit. Brit. Ind. VI. 688. Goebel. Ann. Jard. Buitenz. VII. 132. t. 15. f. 21-29. *S. axillaris,* Moon. Cat. Pl. Ceyl. p. 62. *Diplacrum caricinum,* Br. Prodr. 241. Trim. Fl. Ceyl. V. 101. Endl. Iconogr.

t. 25. Boeck. Linnaea. XXXVIII. 434. *D. tridentatum,* Brugn. Duperr. Voy. t. 26. *D. zeylanicum,* Nees. Wight. Contrib. p. 119.

Singapore: whole island, Bukit Mandi (Ridley 3806); Johor: Sungei Tebrau (Ridley 11499); Malacca: Merlimau; Pulau Besar; Pahang: Pekan (Ridley). Distrib. India, China, Malay islands, Queensland. Common in waste ground and sandy paths. In open places it forms a short compact tuft, in long grass, it becomes taller and weaker, with more distant spikelets.

10. S. BANCANA, Miq. Fl. Ind. Bat. Suppl. 602. A tall rough stout plant, nearly glabrous. Leaves -2 feet long $\frac{1}{4}$-$\frac{1}{2}$ inch wide 3 nerved scabrid sheaths triquetrous stout not winged or occasionally narrowly so. Partial panicles dense crowded at the top sometimes 1 or 2 below light green. Branches crowded. Secondary bracts long setaceous conspicuously exsert. Spikelets unisexual green. Nut ovoid globose reticulate $\frac{1}{10}$ inch long minutely pubescent. Disc yellowish undulate recurved. Clarke Fl. Brit. Ind. VI. 693. *S. macrophylla,* Presl. Rel. Hoenk. I. 200. Nees. Wight. Contrib. 116. *S. malaccensis,* Boeck. Linnaea. XXXVIII. 507.

Singapore (Wallich 3409), (Hullett 3241), Tanglin (Ridley 160); Johor: Kuala Sembrong (Kelsall); Pahang: Pekan (Ridley 1556); Selangor: Kuala Lumpur (Ridley); Malacca (Griffith), Sungei Hudang (Ridley). Distrib. Tenasserim, Malaya, Cochinchina, Oceania. Common in open country. "Rumput Sendanian Bukit."

11. S. MULTIFOLIATA, Boeck. Linnaea. XXXVIII. 510. Stems usually tolerably robust and glabrous about 3 feet tall. Leaves in the upper part of the stem falsely whorled (i.e. 2 to 5 or 6 close together with short sheaths, and a space of 2 inches between these and the next) linear scabrid 16-12 inches long $\frac{1}{4}$- inch wide. Partial panicles lax red pyramidal. Spikelets rather distant slender, narrowed at base. Nut $\frac{1}{10}$ inch long reticulate raised edges of the reticulations hairy, white or reddish, disc $\frac{1}{3}$ to $\frac{1}{2}$ of the height of the nut distinctly 3 lobed. Clarke Fl. Brit. Ind. VI. 693.

Singapore (Walker 242), Garden Jungle, Bukit Timah (Ridley 6113); Johor: Gunong Pulai, Minyak Buku, Batu Pahat (Ridley), Kuala Sembrong (Kelsall, Ridley 4098); Malacca: Pulau Besar (Griffith), Mount Ophir (Ridley); Pahang: Pekan, Tanjong Hantu, Pahang River (Ridley 2146); Perak: Taiping Waterfall; Penang (Wallich 3410 part).

var. *pilosula,* Clarke l.c. more hairy, leaves beneath densely softly hairy. Spikelets greenish white lower bracts subopposite panicle only slightly hairy. *S. pubescens,* Zoll. Verz. Ind. Arch. II. 61, not of S .

Penang: Stoliczka (Kunstler 1544 part), (King 1657). Distrib. Java.

var. *ophirensis,* Clarke l.c. Rather stouter with broader leaves, glabrous except the inflorescence. Lower peduncles of panicles long slender 4 inches. Male spikelets fuscous red narrow crowded into dense pyramidal heads pubescent, lobes of disc margin shorter.

Mount Ophir, Padang Batu 3000 feet alt. (Hullett, Ridley 3122, 10006). In long grass. Endemic. Distrib. of species Rangoon and Malay islands.

Occurs from the level country up to an altitude of 4000 feet. A form like var. *ophirensis* in the compact pyramidal heads, but with shorter peduncles occurs on St. Barbe Isle and the Carimon islands (Dutch Islands South West of Singapore).

12. S. SUMATRENSIS, Retz. Obs. V. 19. t. 2. A tall rather slender plant 3 to 20 feet tall in scrub, weak, glabrous. Leaves linear acuminate 9-12 inches long ¼ inch wide 2-4 crowded together with a space of a foot between. Panicle 6 inches or more long lax light brown. Partial panicles ascending. Glumes mucronate reddish with a green keel and mucro. Nut black when ripe reticulate pubescent nearly globose, half or more concealed by the very large cylindric fleshy red disc margins edges crenulate, base of disc white. Nees. Wight. Contrib. 116. Boeck. Linnaea. XXXVIII. 513. Kurz. Journ. As. Soc. Beng. XLV. part II. 159. Clarke Fl. Brit. Ind. VI. 575. *S. setigera,* Roxb. Fl. Ind. III. 575. *S. purpurascens,* Steud. Syn. Cyp. 169.

Singapore: very common Tanglin, Bukit Timah, etc. (Wallich 3407), (Ridley); Malacca (Griffith 2855); Selangor: Bukit Kudah (Ridley); Pahang: Pekan (Ridley), Kuala Lipis (Machado); Sungei Ujong: Gunong Berembun (Cantley's Coll.), Tampin Hill (Goodenough); Perak (Kunstler 2405); Penang: Tanjong Bunga (Curtis), (Wallich 3407 part). Distrib. Malay Islands. Native name "Rumput Kumbor," "Siamet," "Sendayan."

13. S. HEBECARPA, Nees. Linnaea. IX. 303. Wight. Contrib. 117. Rhizome slender. Stems slender and weak, 2-3 feet tall. Leaves, sheaths more or less winged, blade 12-14 inches long ⅛ inch across edges scabrous. Panicles usually thin and lax, terminal ones sometimes pyramidal fairly stout 3 inches long. Bracts usually exsert conspicuous and long. Spikelets all unisexual dark red. Glumes keeled and mucronate. Nut $\frac{1}{10}$ inch long ovoid white minutely velvety, white, obscurely reticulated when young. Boeck. Linnaea. XXXVIII. 478. Clarke Fl. Brit. Ind. VI. 689. Trim. Fl. Zeyl. V. 99. *S. alata,* Moon. Cat. Pl. Ceyl. 62. *S. scrobiculata,* Zoll. Verz. Arch. Ind. II. 61. *S. stipularis,* Thw. Enum. 353, 435 (not Nees.).

Singapore: Tanglin, Pulau Ubin, Changi (Ridley 5811); Johor: Kota Tinggi, Gunong Panti (Ridley); Selangor: Kuala Lumpur Caves (Ridley 8166); Pahang: Pekan (Ridley); Penang: Tanjong Bunga (Curtis 1828), (1795). Distrib. India, Malay Islands, China, Japan, Australia, Polynesia.

14. S. ELATA, Thwaites Enum. 353a (partly). Robust, about 3 feet tall $\frac{1}{5}$ inch through or less. Leaves 12-24 inches long $\frac{1}{4}$ to $\frac{1}{2}$ inch wide narrowed at the tip scabrous. Sheath three winged, wings sometimes broad, ligule rounded entire hairy. Panicle usually large spreading, partial panicles 3-6 inches long branches divaricate hairy. Bracts conspicuously setaceous. Spikelets numerous scattered unisexual. Female glumes glabrous very shortly mucronate red. Nut tessellated minutely hairy white or dark red, disc. Boeck. Linnaea. XXXVIII. 487. Clarke Fl. Brit. Ind. VI. 690. Trim. Fl. Ceyl. V. 97. *S. lithosperma,* Roxb. Fl. Inf. III. 574 (not Willd.). *S. Hasskarliana,* Boeck. Engl. Jahrb. V. 1884, 511. *Diaphora Cochin Chinensis,* Lour. Fl. Cochinch. 709.

Perak (King's Coll. 2506), Larut Hills 5000 feet alt. (Ridley).

var. *decolorans,* Clarke l.c. Robust dark red. Nuts earlier discoloured finally black purple as are the glumes.

Penang at 2500 feet alt. (Rink), Government Hill (Ridley 9334). The Penang Hill plant (9334) is hardly robust and the panicles are much reduced not pyramidal, and some of the nuts apparently ripe are quite white. Distrib. India, Java, New Guinea, China.

15. S. CHINENSIS, Kunth. Enum. II. 357. Tall rather slender glabrous 2 feet or more. Leaf sheaths not winged triquetrous, ligules with an ovate oblong dark brown process $\frac{1}{6}$-$\frac{1}{5}$ inch long obtuse fragile biauriculate at the base. Leaves linear acuminate 6-15 inches long $\frac{1}{8}$ or more wide smooth. Panicles pyramidal lax, about 4, lowest one on a long slender peduncle. Bracts setaceous conspicuous. Glumes dark red. Style trifid. Nut small tessellate, discoloured. Clarke Fl. Brit. Ind. VI. 690. Boeck. Linnaea. XXXVIII. 486. Trim. Fl. Ceyl. V. 98. *S. ciliaris,* Nees. Wight. Contrib. 117 (not Mich). *S. scrobiculata,* Moritzi. Verz. Zoll. pfl. 98.

Kedah: Gunong Jerai (Ridley 1556). Distrib. Ceylon, China, Malaya, Australia.

16. S. BIFLORA, Roxb. Fl. Ind. III. 573. A tufted glabrous plant, a foot tall or less, roots fibrous. Leaves 6 to 8 inches long $\frac{1}{6}$-$\frac{1}{8}$ inch wide acute. Stems slender not much longer than the leaves. Panicle narrow, elongate, lower branches remote, $\frac{1}{2}$-1 inch long. Spikelets unisexual dark brown. Glumes acuminate keeled green. Style trifid. Nut globose hairy tessellated white $\frac{1}{10}$ inch long with

a short black beak (style base). Clarke Fl. Brit. Ind. VI. 687. *S. Steudeliana,* Miq. Fl. Ind. Bat. III. 344. Boeck. Linn. XXVIII, 475. *S. tessellata,* Benth. Fl. Hongkong 399. Kunth. Enum. II. 343 (part).

Singapore: Tanglin, Blakan Mati Island (Ridley 5810), Bukit Timah (8452); Pahang: Pulau Tawar (Ridley 2147); Penang (Diedrichson), Waterfall (Curtis 1795). Distrib. India, Ceylon, Malaya, China. Common in grass plots and by road sides.

17. S. Neesii, Kunth. Enum. II. 358. var. *borneesis,* Clarke. Stems solitary or tufted a foot tall, hairy especially on the lower sheaths. Leaves few linear obtuse 8 inches long $\frac{1}{8}$ inch across hairy especially below. Panicles slender with 2 clusters of spikelets remote, the lower one on a long slender peduncle. Spikelets 5 to 12 in a cluster, $\frac{1}{2}$ inch long unisexual, ferruginous. Glumes acuminate keeled hairy on the edges. Nut very small, $\frac{1}{16}$ inch long globose covered with conical tubercles hairy at the tip. Boeck. Linnaea. XXXVIII. 449. Clarke Fl. Brit. Ind. VI. 688. *S. stricta,* Moon. Cat. Ceyl. Pl. 621. *Hypoporum capitatum,* Nees. Linnaea. IX. 305. Edinb. Phil. Journ. XVII. 267. Wight. Contrib. 118.

Kedah: Gunong Jerai (Ridley 5146) on a grassy spot at 3000 feet alt., rare. Distrib. Borneo. The tpye form the species, Ceylon.

24. Carex, L.

Perennial herbs. Stems leafy. Spikelets few or many, remote or clustered, bisexual or unisexual, lower flowers female, upper male. Glumes imbricate spirally. Flowers solitary in the glumes. Stamens 2 or 3. Female flowers a compressed or trigonous ovary with a slender 2 or 3-fid style, enclosed in an urceolate sac (the utricle). Nut smaller compressed or 3 angled, enclosed in the utricle.

Species about 500. Whole world.

Inflorescence narrow much shorter than the leaves. Bracts, and stem leaves very short	1. *C. cryptostachys.*
Inflorescence shorter than leaves.	
Spikelets few remote white, utricles glabrous	2. *C. malaccensis.*
Spikelets oblong 1-4 utricles, pilose ..	3. *C. perakensis.*
Spikelets erect crowded utricles numerous	4. *C. Curtisii.*
Spikes long cylindric utricles ovoid hairy	5. *C. arridens.*
Inflorescence elongate or pyramidal panicles of short spikelets.	
Spikelets utricle subglobose	6. *C. indica.*

Spikelets ferruginous utricle ellipsoid glabrous beak entire	7. *C. cruciata.*
Spikelets ferruginous utricle narrow ellipsoid pilose, beak bifid	8. *C. condensata.*

1. C. CRYPTOSTACHYS, Brngn. Bot. Voy. Coquille 152, t. 25. Rhizome stout horizontal ¼ inch through. Leaves numerous linear acuminate tufted 1 to 2½ feet long ⅛-½ inch wide many nerved. Scapes 1 or several much shorter 6-8 inches long, branched. Spikes linear pale green, lax ½ inch or less. Bracts lanceolate cuspidate. Male flowers few. Female glumes ovate submucronate glabrous white. Keel green ½ as long as the utricle, style trifid short. Utricle ⅛ inch long pale green striate hispid, oblong narrowed towards the base beak short. Nut small yellow irregularly distorted on a pedicel swollen at the top. Kunth. Enum. II. 513. Moritzi. Verz. Zoll. Pgl. 98. Boott. Carex. II. 103. t. 310. Boeck. Linnaea. XL. 327. *C. cyrtostachys,* Clarke Fl. Brit. Ind. VI. 714 (by error).

Singapore: Bukit Timah (Ridley 1720); Johor: Batu Pahat (Ridley 11001); Sungei Ujong (Cantley's Coll.); Dindings: Lumut (Ridley 10269); Perak: Larut Hills 3400-4000 feet alt. (King's Coll. 8517); Penang (Wallich 3383); Government Hill (Curtis 1910). Distrib. Malay islands and China. Native name "Rumput Ringgin." Banks in woods rather local.

2. C. MALACCENSIS, Clarke Fl. Brit. Ind. VI. 722. Whole plant 2 feet tall stem slender. Leaves narrow long. Bracts under terminal head 4 inches long by ⅛ inch wide leaflike horizontal spreading. Heads 1 or few pyramidal rigid ¾ inch diameter white. Female glumes minutely hairy. Utricle strongly-nerved glabrous subinflated ovate acuminate pale tip blunt ribbed narrowed into a conico-linear flattened beak scabrous on margins curved inwards trigonous compressed. Style long slender red, stigmas 3 slender. Lankawi Islands (Curtis 1669) rare at Kuala Malacca. Near *C. leucantha,* Arnott. The specific name is unfortunate as the plant occurs only in Lankawi far from Malacca.

3. C. PERAKENSIS, Clarke Fl. Brit. Ind. VI. 720. Rhizome stout woody. Leaves subbasal, 2 feet long flaccid ¼ inch across bases shining brownish black. Inflorescence shorter about a foot or less, lowest peduncle distant slender. Partial panicles with connivent branches pale, 2-3 inches long linear or oblong. Spikelets oblong, with 1 to 4 utricles. Glumes as long as utricle white. Style trifid red. Utricle ellipsoid trigonous hairy green, many nerved beak shortly bifid.

Perak: Larut Hills to 3500 feet (Ridley, Wray); Selangor: Pahang Track 15th mile (Ridley 846).

4. C. CURTISII, Ridl. Journ. Roy. As. Soc. S. Br. Vol. Rhizome short woody. Leaves subbasal crowded, 6 to 8 inches long $\frac{1}{8}$ inch across linear acuminate many nerved. Inflorescence much shorter 3-4 inches long. Bracts much longer. Spikelets erect crowded with numerous utricles. Female glumes shorter broad, hardly mucronate. Keel green, glabrous. Utricles $\frac{1}{8}$ inch oblong with a narrow base, abruptly passing into a short bifid beak, ribbed, trigonous. Nut oblong trigonous fairly close fitting apex truncate, shining dark brown. Style trifid.

Penang: Government Hill (Curtis 1798) at 2500 feet alt. Endemic.

5. C. ARRIDENS, Clarke Fl. Brit. Ind. VI. 726. Robust glabrous except the utricles, rhizome woody stout. Leaves longer than the stem $\frac{1}{2}$ inch broad numerous. Stem 18 inches long. Inflorescence elongate, 12 inches long 2 inches wide. Peduncles 1-2 from each sheath, distant exsert 2 inches long, erect stout. Spikes linear lanceolate dark red $\frac{1}{2}$-$\frac{3}{4}$ inch long. Male glumes oblong ovate obtuse red brown margins scarious. Female ovate acuminate scarcely mucronate. Style trifid. Utricle ovoid trigonous nerveless hairy with golden hairy suddenly narrowed into a beak, slender bifid with 2 large lips. Nut ellipsoid trigonous pyramidal at both ends.

Perak at 3000 feet elevation (Kunstler). Distrib. Pegu.

6. C. INDICA, L. Mant. 574. Rhizome short often covered with the black bristles (remains of leaf-sheaths). Leaves subbasal, linear long acuminate 18 inches long $\frac{3}{8}$- inch wide many nerved, edges scabrid. Stem 18 inches to $2\frac{1}{2}$ feet. Inflorescence 12-18 inches long of distant pyramidal panicles crowded at the top, lower panicles on slender peduncles as much as 6 inches long. Bracts long and leaflike. Young spikes narrow distant. Fruiting spikes light brown. Glumes ovate acuminate strongly nerved. Style trifid. Utricle subglobose many nerved glabrous suddenly contracted into a long narrow beak. Nut ellipsoid trigonous. Boott. Carex. No. 87. t. 250, 252-254. Boeck. Linnaea. XL. 347 (part). Clarke Fl. Brit. Ind. VI. 714 (not Kunth. or Nees.). *C. Moritzii,* Steud. Zoll. Verz. Ind. Archip. II. 60. Boeck. Linnaea. XL. 350. *C. longiaristata,* Kurz. Journ. As. Soc. Beng. XLV. (part II.) 160.

Johor: River Bank Kota Tinggi (Ridley 4138), Kuala Sembrong (Kelsall 4099); Selangor: Bukit Kutu (Goodenough); Perak: Trang (Kunstler 1383); Penang (King 1496). Distrib. India, Cochin China, Java. Banks in woods. Native name "Sesayak."

var. *laetebrunnea,* Clarke l.c. 715. Spikes $\frac{1}{2}$ inch long, browner. Male glumes scarcely artistate. Utricles obliquely erect divaricate. Style base on right nut not swollen. *C. bengalensis,* Thw. Enum.

355. (not Roxb.). *C. indica,* Boeck. Linnaea. l.c. partly Boott. Carex. t. 251.

Pahang: Tahan River (Ridley 2145), Sungei Telei (Machado); Kedah: Gunong Jerai (Ridley 5147). Distrib. Ceylon and Tenasserim.

var. *Milnei,* Clarke l.c.c. Leaves narrowed more crowded ¼ inch across. Inflorescence shorter 6-12 inches long, more slender. Bracteoles setaceous. Spikes pale greenish. Male glumes strongly aristate.

Pahang: Tahan River woods (Ridley 2143a) rare. Perak: Gunong Tuas (Wray 4104).

7. C. CRUCIATA, Wahl. Konigl. Vetensk. Acad. Stockh. XXIV. 149. Rhizome woody horizontal. Stem 2-3 feet tall stout. Leaves often as long ⅜ to ½ inch broad caudate acuminate, many striate, basal sheaths yellow brown. Inflorescence 12 to 20 inches long, lower peduncles often 2-3 inches exsert. Bracts usually as long. Partial panicles pyramidal compound distant branches stiffly divaricate. Spikes ¼ inch long linear oblong ferruginous, with 3 to 6 utricles. Style trifid. Utricles ferruginous or brown, scarcely inflated ellipsoid trigonous quite smooth or minutely scabrous about the neck, ribs about 12, beak usually sparsely scabrous, mouth elliptic on one side. Nut ellipsoid substipitate.. Clarke Fl. Brit. Ind. VI. 715. *C. bengalensis,* Roxb. Fl. Ind. III. 572. Boott. Carex. II. 85 (part) t. 243. Clarke Journ. Linn. Soc. XXV. 82. *C. valida,* Nees. Wight. Contrib. 123. Kunth. Enum. II. 513. *C. indica,* Munro. Seem. Voy. Bot. Herald 423. Clarke l.c. XV. 119 (not Linn.). *C. vacua,* Boeck. Linnaea. XL. 343 (partly).

Perak: Larut (Kunstler 1906).

8. C. CONDENSATA, Nees. Wight. Contrib. 123. Leaves very long 1-2½ feet long ⅜ inch wide. Partial panicles distant 3 or 4, lax oblong hardly pyramidal long peduncled. Spikes ¼ to ⅜ inch long brown, clustered with 3 to 6 utricles to each. Style trifid. Utricle ellipsoid trigonous ribbed beak short ⅓ of its length bifid usually scabrid pilose. Boott. Carex. II. 86. tt. 247, 248. Clarke Fl. Brit. Ind. VI. 716. *C. bengalensis,* Boeck. Linnaea. XL. 347. *C. indica,* Nees. in Wight. Contrib. p. 123.

Malacca: Stream on Gunong Mering, Ophir (Ridley 3136) alt. 3500 feet. Distrib. India.

XXV. GRAMINEAE.

Herbs erect or decumbent or (Tribe *Bambuseae*) shrubs or trees with tall woody stems. Stems terete or flattened jointed, internodes generally hollow, more rarely solid. Leaves simple, entire usually

long, linear or lanceolate narrow parrellel nerved, base sheathing sheath split to the base, with a transverse erect entire or bifid ligule, on the top of the sheath below the base of the blade. Inflorescence terminal or from the upper sheaths as well, composed of spikelets arranged in spikes, racemes or heads. Spikelets composed of three or more distichous bracts (glumes). The two lowest normally empty, the others arranged on a flexuous rachilla, and one or more containing flowers. In each flowering glume is normally, a palea, a thinner two nerved or keeled convolute or flattened glume enclosing the flower. Flowers unisexual or bisexual consisting of 2 to 6 scale like bodies (lodicules) often very minute or absent, 3, more rarely 1, 2 or 6 or occasionally many hypogynous stamens and a pistil. Filaments of stamens linear usually long and free occasionally connate into a tube. Anthers linear or oblong fugacious, 2 celled with small or no apparent connective. Pistil of a one-celled, one ovuled, ovary. Styles 3, rarely 2 or 1 elongate, and covered with stigmatic hairs. Fruit a one seeded utricle usually free within the palea and glume, more rarely adherent to both. Seed erect. Albumen copious, mealy, embryo minute at the base of the albumen and outside it. Cotyledon shield shaped with an erect conic plumule and descending conic radicle.

Species about 3000, in all parts of the world. The Malay Peninsula being covered originally entirely by forests contains comparatively few indigenous species. The forest region contains practically no grasses, except *Centotheca, Lepiaspis* and *Lophatherum* and occasionally bamboo. The majority of the grasses described herein either occur on sandy spots by the sea, or are weeds of cultivation.

Some of the common cosmopolitan grasses having an enormous synonymy, I have not given this in full. It has been well collected in the Flora of British India.

Panicaceae.

Spikelets articulate on the pedicels, or deciduous with them; one to 2-flowered, upper flower only fruiting. 1 Rachis of inflorescence not breaking up into joints.

Tribe I. Paniceae. Monoecious (except Spinifex).

Spikelets 2-flowered, upper flower bisexual, lower male or neuter (occasionally both bisexual).

Spikes articulate on the pedicels, (except *Isachne*) awnless, not involucelled by bristles.

Glumes 3.

Spikelets not thickened at base .. .. 1. *Paspalum.*
Spikelets thickened at base .. .. .. 2. *Eriochlae.*
Glumes 4. I & II separately deciduous 3. *Isachne.*
Glumes IV not appendaged .. .. 4. *Panicum.*
Glume IV with 1 or 2 appendages .. 5. *Ichnanthus.*
Large reed-like grass. Spikelets minute 6. *Thysanolaena.*
Spikelets involucelled by bristles .. .. 7. *Setaria.*
Spikelets awned.
Glume IV awned. Leaves narrow .. 8. *Axonopus.*
Glume I awned. Leaves lanceolate .. 9. *Oplismenus.*
Spikelets persistent on their pedicels or deciduous with them.
Spikelets solitary on a broad flattened rachis 10. *Stenotaphrum.*
Spikelets in 2 rows, secund, lower one or two female upper ones male .. .. 11. *Thuarea.*
Large dioecious grass with spikelets in large heads .. .. 12. *Spinifex.*

Tribe II. Oryzeae. Spikelets one flowered panicled articulate on the pedicels and deciduous from them. Stamens 6.
Glume 2-3. III often awned .. .. 13. *Oryza.*
Glume 1 awnless, membranous .. .. 14. *Leersia.*

Tribe III. Zoysieae. Spikelets spicate or racemed one-flowered bisexual, articulate on the pedicels and deciduous with them.
Spikelets not awned .. .. 15. *Zoysia.*
Spikelets, glumes I and II awned .. .. 16. *Perotis.*

Tribe IV. Phareae. Leaves broad. Spikelets panicled 1 flowered unisexual. Glumes 3. Gl. III in female spikelets hardened or inflated in fruit .. .. 17. *Leptaspis.*

Tribe V. Maydiae. Spikelets unisexual, in spikes. Male spikes in terminal panicles, or continuous with the spikes. Fruiting spikelets enclosed in a stony polished white or blue bract .. .. 18. *Coix.*

Andropogoneae.

Inflorescence spicate racemed or panicled. Spikelets solitary or in pairs, 1 sessile and 1 pedicelled 1 or 2 flowered, the sessile 1 bisexual, pedicelled 1 male barren or bisexual, or spikelets in threes 1 sessile bisexual and 2 pedicelled barren or male ones. Glumes I

and II awned or not, IV the smallest, awned or reduced to an awn only. Awn twisted at base.

Spikelets similar unilateral on slender spikes — 19. *Dimeria.*

Spikelets solitary or in pairs one-flowered awnless.

Rachis inarticulate .. .. .. — 20. *Imperata.*

Rachis articulate panicled large .. .. — 21. *Saccharum.*

Spikelets awned in pairs 2 flowered. Rachis fragile.

Sipkes solitary. Glumes not pectinate .. — 22. *Pogonatherum.*

Spikes solitary. Glumes pectinate .. .. — 23. *Eremochloa.*

Spikes digitate or fascicled.

Glume IV very small .. .. .. — 24. *Pollinia.*

Spikes solitary, binate or digitate.

Glume IV larger .. .. — 25. *Ischoemum.*

Spikelets sunk in pits in an articulate rachis.

Sessile spikelets solitary.

Glume I ovate or oblong .. .. — 26. *Rottboellia.*

Glume I globose pitted .. .. .. — 27. *Manisuris.*

Sessile spikelets 2 .. .. — 28. *Mnesithea.*

Spikelets ternate in a simple spikes rachis fragile .. .. — 29. *Polytrias.*

Spikelets ternate in short spikes one jointed enclosed in a peduncled spathe .. — 30. *Apluda.*

Spikelets in pairs in solitary fascicled or panicled spikes.

Glume III barren or absent .. .. — 31. *Andropogon.*

Spikelets in clusters of 5 or more the four lowest sessile surrounding the upper bisexual ones .. .. — 32. *Anthistiria.*

Poaceae.

Spikelets not articulate with the pedicels, rachilla articulate at the base, flowers 1 to many, lowest one always bisexual, upper ones often male, or barren.

Spikelets 1 flowered. Glumes 3.

Leaves ovate cordate .. .. .. — 33. *Sphoerocaryum.*

Leaves linear .. .. — 34. *Sporobolus.*

Aveneae. Spikelets 2 to 6 flowered panicled awned .. .. — 35. *Eriachne.*

Chlorideae. Spikelets 1 or more flowered biseriate on one or more spikes or panicle.

Spikes digitate or whorled.
Spikelets 1 flowered minute awnless .. .. 36. *Cynodon.*
Spikelets 1 flowered, awned .. .. .. 37. *Chloris.*
Spikelets 3-12 flowered .. .. .. 38. *Eleusine.*
Spikelets long slender panicled.
Spikelets minute not awned .. .. .. 39. *Leptochloa.*

ARUNDINIDAE. Inflorescence panicled large. Spikelets 2, many flowered silky hairy on callus or sides or rachilla.
Flowering glumes subulate lanceolate glabrous 40. *Phragmites.*
Flowering glumes awned, with 2 bristles at the tip silky .. .. 41. *Neyraudia.*

ERAGROSTEAE. Spikelets many flowered.
Empty glume shorter than the lowest flowering glume .. .. 42. *Eragrostis.*
Empty glume longer than the lowest flowering glume .. .. 43. *Myriostachys.*

CENTOTHECEAE. Leaves broad, tesselate-nerved. Spikelets 1 or more flowered secund in one or two rows on a simple spike or branches of a simple panicle.
Spikelets 1 flowered, upper glumes empty .. 44. *Lophatherum.*
Spikelets 3 or more flowered, fruiting glumes armed with adhesive bristles .. .. 45. *Centotheca.*

HORDEAE. Spikelets 1 or more flowered sessile sunk in the cavities of a simple spike.
Spikelets solitary in a cylindric spike .. 46. *Lepturus.*

BAMBUSEAE. Shrubs of trees. Spikelets 1 to many flowered. Lower ones empty, upper ones fertile. Palea large. Lodicules 1-3 large. Stamens 6 or more. Styles 1 to 3.
Palea 2 keeled.
Pericarp thin adnate to the seed.
Filaments free .. .. 47. *Bambusa.*
Filaments connate into a tube.
Spikelets many flowered .. .. .. 48. *Gigantochloa.*
Spikelets few flowered .. .. .. 49. *Oxytenanthera.*
Pericarp fleshy or crustaceous free from the seed.
Spikelets few flowered .. .. .. 50. *Dendrocalamus.*
Spikelets 1 flowered. Palea 0, or glume-like.

Pericarp crustaceous or fleshy free.

Spikelets minute. Lodicules 0	51. *Dinochloa.*
Spikelets moderately large or larger. Lodicules generally present.	
Flowering glumes 1-2. Fruit small ..	52. *Schizostachyum.*
Flowering glumes 1. Fruit large ..	53. *Ochlandra.*

Tribe I. PANICEAE.

1. PASPALUM, L.

Annual or perennial grasses. Inflorescence a simple spike or several slender spike-like racemes. Spikelets 1 flowered subsessile or distinctly pedicelled, on a flattened often winged rachis, articulate on the pedicel but not thickened at the base. Glumes 3 with occasionally a rudimentary 4th (corresponding to Glume I in Panicum) I and II membranous thin, subequal, III more coriaceous. Stamens 3. Styles 2. Grain.

Species about 150. All warm regions.

Spikelets flattened orbicular. Glumes 3 very coriaceous.	
Spikelets 2-4 ranked, glabrous	1. *P. scrobiculatum.*
Spikelets 2 ranked, ciliate, rachis very narrow	2. *P. conjugatum.*
Spikelets ovate oblong shortly pedicelled ..	3. *P. distichum.*
Spikelets lanceolate sessile	4. *P. platycaule.*
Spikelets ellipsoid or lanceolate in pairs on unequal pedicels (*Digitaria*).	
Spikelets $\frac{1}{8}$ inch long lanceolate or oblong ..	5. *P. sanguinale.*
Spikelets $\frac{1}{16}$ inch long glabrous, ellipsoid ..	6. *P. longiflorum.*
Spikelets $\frac{1}{5}$ inch long bearded	7. *P. heteranthum.*

1. P. SCROBICULATUM, L. Mant. I. 29. Annual tufted erect or occasionally decumbent 9 to 36 inches or more. Leaves $\frac{1}{8}$ to $\frac{1}{2}$ inch across. Spikelets erect or spreading $1\frac{1}{2}$-3 inches long, alternate 2 to 6 or 7 pale green, sessile, rachis filiform or broad $\frac{1}{16}$ to $\frac{1}{6}$ inch wide edge white ciliolate. Spikelets in 2 or 3 rows, closely imbricate sessile or shortly pedicelled $\frac{1}{16}$ to $\frac{1}{8}$ inch across orbicular obtuse or subacute biconvex or flattened glabrous. Glumes I. and II. equal and similar membranous planoconvex white edged green. Glume III brown shining thickly coriaceous edges incurved over IV (palea) orbicular brown coriaceous with two thin incurved wings enclosing the grain. Stigmas purple grain biconvex. Roxb. Fl. Brit. Ind. V. I. 278. Duthie. Field and Garden Crops 8 t. 27. Miq. Fl. Ind. Bat. III. 430. Hook. fil. Fl. Brit. Ind. VII. 10. Common over the whole peninsula.

Singapore: Tanglin (Hullett 482); Johor; Malacca; Selangor: Kuala Lumpur (Ridley 5772); Pahang; Kelantan; Penang (Curtis 492); Perak (Wray). Distrib. All warm regions. Native name "Rumput Tulong Sintadok," "Rumput Hijau," "Rumput Patah Siku." The common form has glabrous spikelets, often in 3 or 4 rows, but forms with very pubescent spikelets occur. The cultivated Indian form *P. Kora,* Willd. I have not seen here, and except in the matter of slenderness of stem, breadth of leaves and such characters due to habitat, the local form here varies but little.

I have omitted the greater part of the very extensive synonymy of this common plant, upwards of 30 synonyms, which are to be found in the Flora of British India.

2. P. CONJUGATUM, Berg. Act. Holm. VII. 129. t. 8. Stoloniferous, with long rooting stolones rather stout. Stems 1-2 feet tall, simple or branched leafy slender. Leaves acuminate 6 inches long ¼- wide linear lanceolate edges ciliate, as is the mouth of the sheath. Peduncle very slender, with two very narrow divaricating spikes 4 inches long, rachis narrow, spikelets in 2 rows, $\frac{1}{16}$ inch long orbicular shortly pedicelled. Glumes 1 and 2 thin white edged green, orbicular with long white hairs on the edge, No. 3-4 coriaceous pale. Anthers oblong brown. Stigmas brownish. Flor. Brit. Ind. VII. 11. Trim. Fl. Ceyl. V. p. 122. Common in cultivated districts, but probably introduced.

Singapore; Johor; Malacca; Perak (Wray); Pahang: Pekan (Ridley); Penang (Curtis 493). Distrib. Tropical regions of both hemispheres but probably introduced from South America. Owing to its adhesive spikelets, it is carried about all over the country attached to the clothes of natives. I have seen it above Padang Batu in Mount Ophir growing in a crack of the rock at the regular washing place of the natives, undoubtedly brought up there from the plain country.

3. P. DISTICHUM, L. Amoen. Acad. V. 391. Stem creeping and rooting in mud ascending for about a foot, pale coloured leafy to the top. Leaves linear acuminate distichous 3-4 inches long ⅛- inch across. Spikes 2, 1 to 3 inches long glabrous. Spikelets yellowish lanceolate in 2 rows very shortly pedicelled ⅛ inch long or less. Glumes 1 and 2 thin glabrous lanceolate 3 and 4 more coriaceous. Flor. Brit. Ind. VII. 12.

Singapore: Tanjong Ru, Tanjong Katong (Ridley 444, 1702); Johor: Hulu Sedili (Kelsall); Pahang: Sungei Meang (Ridley 1417); Dindings: Lumut (Ridley); Penang: Bagian Jennal (Curtis 1957); Malacca (Griffith). Distrib. All warm countries, absent from Ceylon. Very abundant in tidal rivers, or saline mud.

4. P. PLATYCAULE, Poir. Encyc. IV. 34. Steud. Syn. Gram. 22. Glabrous stoloniferous, forming tufts of broad bright green undulate leaves. Stems flattened 2 feet tall or less leafy. Leaf sheaths broad flattened, blade linear obtuse 8 inches long ½ inch wide edges at base ciliate. Peduncles 2 from each leaf axil slender, bearing 2 to 5 alternate very slender spikes 3 to 4 inches long. Rachis triangular. Spikelets distant ellipsoid green nearly sessile glabrous. Outer glume 1 and 2 thin elliptic, pubescent at base No. 3 and 4 shorter thinly coriaceous pale obtuse. Grain elliptic smooth flattened yellowish. *P. compressum,* Nees. Agr. Braz. 22. Trim. Ic. t. 118.

Singapore: Tanglin. Abundant in and round the Gardens. This South American grass seems to have quite established itself here.

5. P. SANGUINALE, Lam. Ill. I. 176. Annual or perennial often creeping 6 to 18 inches long leafy. Leaves linear or linear lanceolate flaccid, glabrous or hairy, sheath long, glabrous or hairy ligule. Spikes 3 to 10 or more crowded at the end of the rather slender peduncle, sessile or stalked 1 to 6 inches long, alternate or whorled. Rachis slender flattened scabrid. Spikelets solitary or in pairs, stalked, with unequal stalks when in pairs, lanceolate or oblong. Glume I. 3-5 nerved glabrous or hairy, II. 5 nerved lanceolate, III. smooth. Nut oblong ellipsoid smooth. Flor. Brit. India VII. 13. Trim. Fl. Ceyl. l.c. 123. The whole peninsula in waste ground and roadsides. A very variable plant distributed over all regions warm enough for it, and with a correspondingly large synonymy.

var. 1 *commutatum.* Tall and stout or slender tufted or far creeping. Leaves long and broad, spikes few or many, long 3 to 6 inches crowded and sometimes whorled. Common in wet or rank soil.

Singapore: Tanglin; Johor: Sempang River (Ridley 11009); Pahang: Chinton (Ridley 2829), Rumpin River, Kuala Tembeling (Ridley 2138 very far creeping form with strongly hispid sheaths); Penang Waterfall (Curtis 1911).

var. *ciliare,* Hook. fil. l.c. Tall and slender with few slender spikelets 2-6, rachis narrowly winged. Glumes 1 and 2, strongly ciliate on the edge.

Malacca Hill (Ridley).

var. *pruriens,* Hook. fil. Erect glabrous or sheaths hirsute. Spikes 3 to 6, slender 3 to 6 inches long. Spikelets lanceolate acute narrow, nearly or quite glabrous. Glume I nearly as long as II which is very narrow and 3 nerved, a minute basal glume at its base.

Singapore: Changi, Tanglin (Ridley 446); Pahang: Sungei Meang (Ridley 1412); Malacca (Cuming 2397), (Maingay).

var. *debile,* Hook. fil. A dwarf plant 6 inches to a foot tall, slender tufted, usually glabrous. Leaves short linear lanceolate acu-

minate ½-1 inch long. Spikes 2 to 3, slender 1½-3½ inch long, rachis narrowly winged. Spikelets lanceolate acuminate very narrow glabrous. *P. debile,* Poir. Encyc. V. 34. *Digitaria debilis,* Willd. Enum. Hort. Berol. I. 91.

Singapore: Telok Kurau, Gardens (Ridley 11368); Malacca: Ayer Moleh (Ridley). A weed in sandy ground or poor soil.

6. P. LONGIFLORUM, Retz. Obs. IV. 15 (not Trim.). Stems tufted often branched and rooting, 6 to 24 inches, tall slender, leaves linear or lanceolate acute ⅛ to nearly ¼ inch across ½-3 inches long glabrous or hairy, ligule short membranous. Spikes 1-5 or 6 very slender 2- inches long rachis narrow not winged. Spikelets very small ellipsoid green or purple in pairs, 1 nearly sessile the other pedicelled. Glume I and II elliptic thin 3 nerved pale. Glume III dark brown or pale. Fl. Brit. Ind. VII. 18. *P. brevifolium,* Flugge. Gram. Mono. 150. *P. chinense,* Nees. Hook. and Arn. Bot. Beech. Voy. 231. *Panicum parvulum,* Trim. Pan. Gen. 117.

Singapore: Tanglin, Gardens (Ridley 11337), Bajau (Ridley 457), Jurong (456); Pahang: Sungei Meang (Ridley 1423); Selangor: Kuala Lumpur (Ridley 5785); Johor: Tanah Runto; Penang Waterfall Gardens (Curtis 1919). Distrib. Tropical regions of the old world. A common weed. The common form here is almost completely glabrous, even the spikelets being quite glabrous. The Jurong plant No. 456 has however very hairy leaves.

7. P. HETERANTHUM, Hook. fil. Fl. Brit. Ind. VII. 16. Stout creeping plant, ascending stem 12 inches tall leafy. Leaves linear lanceolate acuminate 1-2 inches long ⅛ wide. Peduncle stout. Spikes 2 to 3 stout 8-12 inches long, rachis thick hardly winged. Spikelets very distant large covered with long hooked white hairy, long pedicelled, lower spikelets glabrous, ⅕ inch long, lanceolate. Basal glume ovate truncate short. Glume I lanceolate strongly ribbed acuminate, II as long both bearded. No. III shorter. *Panicum barbatum,* Kunth. Rev. Gram. I. 33. Enum. Pl. I. 84. Steud. Syn. Gram. 43. *P. clytroblepharum,* Steud. Zoll. Syst. Verz. 54. *P. eminens,* Steud. l.c. 13. *P. heteranthum,* Nees. and Meyen. Nov. Act. Cur. XIX. Suppl. 1, 174. *Digitaria barbata,* Willd. Enum. Hort. Berol. 91. *D. clytroblephara,* Miq. Fl. Ind. Bat. III. 439.

Pahang: Sungei Meang (Ridley 1413). Rumpin River (6); Johor: Jambu Larang (Feilding). Distrib. Java and China. Sand hills by the sea on the East Coast rare.

2. ERIOCHLOA, H. B. & K.

Annual or perennial grasses. Spikelets lanceolate with a distinct thickened base secund on the branches of a raceme or panicle, articulate on the thickened top of the pedicel. Glumes I and II

subequal lanceolate, thin, III shorter apiculate hardening in fruit. Lodicules truncate. Stamens 3, green oblong free.

Species few, mostly as American. Only distinguished from *Paspalum* by the thickened base of the spikelet.

E. POLYSTACHYA, H. B. K. Nov. Gen. and Sp. I. 95. f. 31. Stems tall leafy 2 feet tall or more stout geniculate. Leaves long linear acuminate 6-8 inches long ¼ inch wide or less glabrous smooth, or hairy. Panicle 2-6 inches long of numerous slender branches eventually spreading spikelets ⅛ inch long, lanceolate acute shortly pedicelled. Glumes I and II subequal lanceolate acuminate silky or villous, pale green or purplish, III shorter glabrous more coriaceous apiculate shorter. Kunth. Enum. I. 72. Suppl. 52. Hook. fil. Fl. Brit. India VII. 20. Trim. Fl. Ceyl. l.c. 126. *E. annulata,* Kunth. Rev. Gram. I. 30. Enum. I. 73. *E. punctata,* Ham. Prodr. Fl. Ind. Occ. 5. Kunth. l.c.c. 72. *E. succincta,* Kunth. l.c. 73. *E. sundaica,* Miq. l.c. Suppl. 606. *Helopus annulatus,* Nees. Mart. Fl. Braz. II. 17. *H. acrotrichus,* Steud. Syn. Gram. 100. *Milium punctatum,* Linn. Amoen. Acad. V. 392. *M. polystachyum,* Spreng. Syst. I. 251. *M. ramosum,* Retz. Obs. VI. 22. Griff. Notul. III. 15. Ic. Pl. As. t. 139. f. 60.

Johor: Batu Pahat (Ridley); Selangor: Petaling, Kuala Selangor, old fort (Ridley); Malacca (Fl. Brit. Ind.); Dindings: Lumut (Ridley); Lower Perak: Sitiawan (Ridley 7262). Distrib. All hot countries. Occurs here in waste ground occasionally.

3. ISACHNE, Br.

Perennial grasses, with loose panicles of small or minute subglobose or ovoid spikelets, 1-2 flowered, not articulate with the pedicel. Glumes IV often all separately deciduous, I and II subequal convex empty, III and IV longer or smaller, thinner, III male or rarely bisexual, IV bisexual or female hemispheric coriaceous. Lodicules minute. Stamens 3, rarely 4-6 green free.

Species 25.

Glumes I and II much longer than IV ..	1. *I. Kunthiana.*
Glumes I and II about as long as IV	
Glumes III and IV equal and similar, hemispheric. Tall plants.	
Panicle very lax, leaves 4-8 inches	2. *I. albens.*
Panicle rather compact, leaves 2 inches ..	3. *I. javana.*
Panicle thick. Leaves broad, spikelets pubescent	4. *I. sylvestris.*
Glume III longer ovate flat, tall plant ..	5. *I. australis.*
Glume III short. Dwarf plant	6. *I. miliacea.*

1. I. KUNTHIANA, Wight. and Arn. Wight. Cat. 1659. Thw. Enum. Pl. Zeyl. 362. A dwarf creeping ascending plant with slender stems geniculate and branched 6-10 inches long. Leaves ovate to ovate lanceolate acuminate 1½-½ inch long scabrid or hairy, base cordate mouth of sheath and sheath hairy. Panicle 1-2½ inch long, branches short rather stout eventually spreading. Spikelets $\frac{1}{20}$ to $\frac{1}{8}$ inch long smooth or bristly. Glumes I and II ovate acuminate strongly ribbed and bristly. No. III and IV much shorter rounded subequal glabrous or pubescent. Miq. Fl. Ind. Bat. III. 460. Hook. fil. Fl. Brit. Ind. VII. p. 21. Trim. Flor. Ceyl. V. 127. *I. Neesiana,* Steud. Syn. Gram. 96. *Panicum cuspidiglume, Kunthianum, Metzii* and *obliquum,* Steud. l.c. 95 and 96.

Singapore: Tanglin (Ridley 73, 6110), Bukit Mandai (Ridley 5770), Chan Chu Kang (5769), Jurong (55); Selangor: Petaling, Rawang (Ridley 7777). Distrib. India, Ceylon, Java, Borneo. In damp open spots in forests by streams abundant.

2. I. ALBENS, Trim. Sp. Gram. Ic. t. 25. Stems tall branched, 1 to 4 feet tall geniculate. Leaves linear or linear-lanceolate acuminate 4 to 8 inches long ½ inch wide glabrous, or sparsely hairy beneath margins thickened, scabrid beneath, ribs 3 to 5 pairs elevated beneath. Panicle large lax spreading 9 inches long and wide, branches capillary. Spikelets solitary globose very small pale. Glumes I and II oblong obtuse glabrous or pubescent, obscurely nerved, III and IV shorter both often bisexual hemispheric coriaceous. Kunth. Enum. Pl. I. 137. Miq. Fl. Ind. Bat. III. 459. Hook. fil. Fl. Brit. Ind. VII. 22. *Panicum albens, P. saxatile, P. Zollingeri,* Steud. Syn. Gram. 96, 97.

Perak: Larut Hills, Gunong Hijau at 5000 feet alt. (Wray), (Ridley 3115). Distrib. India, China and Malaya.

3. I. JAVANA, Nees. Miq. Pl. Jungh. 376. Fl. Ind. Bat. III. 452. Stems tall stiff branched -30 inches tall. Leaves lanceolate acuminate 1½-2 inches long ⅛-¼ inch wide finely ribbed hairy and scabrid when dry, base and mouth of sheath and one side of it ciliate. Panicle pyramidal, with very slender branches 3 inches long about as wide when fully developed. Spikelets subglobose on very slender pedicels, pallid $\frac{1}{16}$ inch long. Glumes I and II ovate subcoriaceous smooth III and IV equally long, III narrower with incurved edges, male with 2 or 3 stamens, IV broader hemispheric with 3 or 4 stamens. Hook. fil. Fl. Brit. Ind. VI. 24. *Panicum batavicum,* Steud. Syn. Gram. 96.

Malacca: Mount Ophir at 3000 feet elevation (Maingay), (Lobb, Hullett 867), (Ridley 3128); Perak: Gunong Bubu (Wray 3820), Gunong Batu Putih (Wray 6700); Penang Waterfall (Curtis 1813). Distrib. Burmah, Java, Borneo. In damp spots at an altitude of

3000 to 5000 feet rarely lower. It resembles somewhat *I. australis* but is much stiffer, more glaucous, with stouter stems and more rigid leaves.

4. I. SYLVESTRIS, Ridl. Journ. Roy. As. Soc. S. Br. XLIV. p. 206. Stem ascending geniculate rather stout 9 inches tall. Leaves lanceolate acuminate with a broad base 3 inches long ½ inch wide, margins thickened glabrous above pubescent beneath sheaths hairy. Panicle 6 inches long much branched 3 inches across branches slender subwhorled. Spikelets solitary $\frac{1}{10}$ inch long subglobose. Glume I ovate cylindric ribbed. Glume III elliptic obtuse shorter coriaceous paleate male. Glume IV similar but pubescent female. Grain free brown.

Dindings at Telok Sera (Ridley 7265).

5. I. AUSTRALIS, R. Br. Prod. 196. Stems tufted slender 8 inches to 4 feet tall. Leaves thin lanceolate 1¼-3 inches long ¼ inch wide edges at base, ciliate, sheaths ciliate along one side nearly as long as the blade. Panicle lax pyramidal with slender spreading branches, 3 to inches long. Spikelets distant, pear-shaped or globose, glabrous or slender pedicels, green blunt. Glumes I and II thin elliptic obscurely nerved, III longer ovate flat, IV much smaller subcoriaceous. Stigmas violet. Kunth. Enum. I. 136. Miq. Fl. Ind. Bat. III. 461. Hook. fil. Fl. Brit. Ind. VII. 24. Trim. Fl. Ceyl. l.c. 128. *I. atrovirens,* Trim. Gram. Pan. 251. *I. lepidota,* Steud. Flora XXIX. 19. *Panicum atrovirens,* Trim. Spreng. Neue. Entdeck. II. 88. Syst. Veg. I. 318. *P. australis,* Rasp. Ann. Sc. Nat. V. 299. *P. nodibarbatum,* Steud. Syn. Gram. 95.

Singapore: Tanglin, Changi (Ridley 75); Johor: Bukit Murdom (Kelsall 4113); Pahang: Pekan (Ridley); Malacca: Ayer Panas; Perak: Kuala Kangsar (Ridley), (Wray). Distrib. India, Malay Isles, Australia and New Zealand. Very common in open grassy swamps. A good fodder grass. Wray gives the name "Rumput Minyak" for this.

6. I. MILIACEA, Roth. Nov. Pl. 58. Stems very slender creeping thin ascending 6-14 inches. Leaves ovate lanceolate or lanceolate, acute ½-1¼ inch long hairy. Panicle 1½-2 inches long, branches very slender, spreading eventually. Spikelets very small glabrous $\frac{1}{20}$ inch. Glumes I and II thin elliptic blunt, obscurely nerved III and IV nearly as long. Kunth. Enum. Pl. I. 136. Miq. Fl. Ind. Bat. III. 459. Hook. fil. l.c. 25. Trim. Fl. Ceyl. l.c. 128. *I. meneritana,* Poir. Encyc. Supp. III. 185. *I. minutula,* Kunth. Rev. Gram. II. t. 117. Enum. I. 137. *I. adstans,* Miq. l.c. 461. *I. geniculata* and *stigmatosa,* Griff. Notul. III. 41, 42. Ic. Pl. As. t. 139. fig. 206, 148. f. 2. *Panicum aequatum, P. adstans, P. Benjamini, P. gonatodes,* Steud. l.c. 98, 94, 96, 95.

Singapore: Tanglin (Ridley 5771), Bukit Timah Road (5768), Chua Chu Kang (8037); Pahang: Kuala Luit (Ridley); Malacca: Sungei Udang (Ridley). Distrib. India, China, Malaya, Polynesia and N. Australia. In wet spots, forming large masses. This certainly approaches *I. australis* but the typical small form does not as a rule grow in the same locality nor appears to pass into it.

4. Panicum, L.

Annuals or perennials. Leaves linear, lanceolate or ovate. Panicles lax or dense. Spikelets small 1-2 flowered, articulate on their pedicels glabrous or pubescent very rarely awned. Glumes 4, I and II empty, II and III subequal larger than I oblong ovate or lanceolate, III male or empty, paleate or not, IV bisexual oblong, ovate or lanceolate glabrous becoming coriaceous in fruit. Palea 2 nerved. Stamens 3. Grain free within glume IV and its palea.

Species very numerous. All warm countries.

§ 1. Paspaloideae. Spikes alternate racemed, rachis flat with globose or ovoid spikelets in 2 rows .. .. 1. *P. punctatum.*

§ 2. Echinochloa. Annuals. Spikes alternate or crowded in a raceme. Spikelets 3 or 4 rows on the under surface of the spikes, globose or ovoid. Gl. III cuspidate or awned.

Inflorescence compact. Spikelets usually awned .. .. 2. *P. Crus-Galli.*

Inflorescence lax, spikes short, no awns .. 3. *P. colonum.*

§ 3. Brachiaria. Spikelets 1-2 rows on the underside of simple or branched racemes ovoid not awned.

Stout grass, nodes bearded .. .. 4. *P. muticum.*

Wiry stoloniferous grass, nodes glabrous .. 5. *P. distachyum.*

§ 4. Hymenachne. Panicles spike-like (except *P. auritum*), spikelets small ovoid or lanceolate often curved.

Glumes II and III 7-9 veined.

Panicle dense spike-like.

Spikelets curved acute .. .. 6. *P. indicum.*

Spikelets obovoid .. .. .. 7. *P. myosuroides.*

Glumes II and III 3-5 veined.

Panicle spike-like .. .. .. 8. *P. myurus.*
Panicle much branched long .. .. 9. *P. auritum.*

§ 5. Ptychophyllum. Leaves broad plicate. Panicle decompound nodding .. 10. *P. plicatum.*

§ 6. Effusae. Panicle usually spreading lax spikelets small terete.

Annuals.

Leaves glabrous .. .. .. 11. *P. humile.*
Leaves hairy .. .. 12. *P. luzonense.*

Perennials.

Glume III epaleate.

Spikelets lanceolate acute .. .. 13. *P. nodosum.*
Spikelets subglobose or oblong .. 14. *P. montanum.*
Spikelets ellipsoid very small .. 15. *P. humidorum.*

Glume III paleate.

Leaves linear lanceolate.

Spikelets acute.

Glume I half as long as III.

Glumes ovate tips thickened .. .. 16. *P. oryzoides.*

Glumes not thickened at the tips.

Leaves glabrous .. .. .. 17. *P. psilopodium.*
Leaves hairy .. .. .. 18. *P. elegantissimum.*
Glume I $\frac{1}{6}$ of Gl. III orbicular .. 19. *P. repens.*
Glume I $\frac{1}{4}$ length of Gl. III ovate .. 20. *P. proliferum.*

Spikelets obtuse.

Very long scandent grass .. .. 21. *P. sarmentosum.*
Stems tall not scandent .. .. 22. *P. maximum.*
Leaves ovate amplexicaul leaves glabrous .. .. 23. *P. ovalifolium.*
Leaves ovate amplexicaul leaves hairy .. .. 24. *P. hirtifolium.*

§ 7. Gibbosae. Perennial grasses, with very small laterally compressed spikelets in lax panicles.

Pedicels of spikelets short .. .. 25. *P. pilipes.*
Pedicels long capillary .. .. .. 26. *P. patens.*

§ 1. Paspaloideae.

1. P. punctatum, Burm. Fl. Ind. 26. Perennial. Stems very stout nearly $\frac{3}{8}$ inch through below, 2 to 4 feet tall, quite glabrous. Leaves linear acuminate 12 inches long $\frac{1}{2}$ inch wide edges scabrid, sheaths long and broad, ligule a ring of hairs. Spikes numerous long 1 inch, longer than the internodes, spikelets imbricating in 2 rows, on a flattened sinuate scabrid rachis pale. Glume I very short and broad, truncate, II very short $\frac{1}{2}$ of the length of III, broad truncate, III ovate acute thin 3-5 nerved. IV ovate cuspidate granulate. Grain brown granulate. Hook. fil. Fl. Brit. Ind. VII. 29. *P. fluitans,* Retz. Obs. III. 8. Roxb. Fl. Ind. I. 293. Griff. Notul. III. 25. Ic. Pl. As. 139. t. 231. *P. brizoides.* Retz. l.c.

Johor: Sempang Kiri, Batu Pahat (Ridley 11008). Distrib. India, Africa, and Malaya. Rare in grassy fields by the river.

§ 2. Echinochloa.

2. P. Crus-Galli, L. Sp. Pl. 56. A large coarse grass, 1 to 3 feet tall. Leaves broad linear acuminate 9-12 inches long $\frac{1}{4}$ inch wide scabrid or smooth. Panicle contracted or pyramidal very variable with numerous spikes $\frac{1}{2}$-$1\frac{1}{2}$ inch long simple or compound, rachis scabrid or bristly. Spikelets subsecund shortly pedicelled $\frac{1}{8}$ inch long, green or purplish, hispid. Glume I short about $\frac{1}{4}$ length of II ovate cuspidate, II ovate lanceolate awned, III male or neuter awned much longer, IV more coriaceous glabrous shining shortly awned. Hook. fil. Fl. Brit. Ind. VII. 30.

Singapore (Hullett); Johor: Pengerang (Kelsall Herb. H. B. S. 4017), Sempang Kanan, Batu Pahat (Ridley 11016); Pahang: Temerloh; Selangor: Bukit Kudah (Ridley 58); Penang: Balik Pulau (Ridley 9407), Bagian Jennal (Curtis 1958); Kelantan: Kamposa (Ridley). Distrib. All warm countries. Very variable in the form of the panicle and in the development of the awns of the glumes. This occurs as a casual in waste ground and also in damp spots but is not common. It is known as Padi Burong.

There are two forms: one var. *stagninum* with long awns, and var. *frumentaceum* with very short ones or none. This latter is doubtless here as the remains of cultivation but I have never found it cultivated in quantity anywhere.

3. P. colonum, Linn. Syst. Ed. X. 870. Perennial with rather slender stems geniculate and rooting at base, about 6-18 inches tall. Leaves linear lanceolate acuminate 1-2 inches long -$\frac{1}{4}$ wide, quite glabrous. Panicle 3-6 inches long, spikes several erect not awned. Rachis pilose or glabrous spikelets $\frac{1}{10}$-$\frac{1}{8}$ inch long, white green or purple subglobose acute, glabrous or hispid. Glume I ovate cuspidate

½ as long as Glume III 3-5 nerved. Glume II ovate acuminate hispid. Glume III slender but shorter. Glume IV ovoid smooth, acute or blunt. Hook. fil. Fl. Ind. VII. 32. Duthie. Indig. Fodder grass t. 4. *P. brizoides,* L. Mant. I. 184. *P. caesium,* Nees. Bot. Beechey Voy. 235. *P. cuspidatum,* Roxb. Fl. Ind. I. 298. *P. haematodes,* Presl. Fl. Sic. I. 43. *P. numidianum,* Presl. Cyp. and Gram. 19. *P. pictum,* Koen. Naturf. XXIII. 204. Wight. Cat. 1648. *P. pseudocolonum,* Roth. Nov. Sp. 147.

Singapore: Tanglin, Jurong, etc. (Ridley); Johor: Bukit Murdom (Kelsall), Johor Bahru (Feilding); Malacca Town (Ridley); Selangor: Kuala Lumpur (Ridley 5781); Pahang: Pulau Manis, Pahang River, Mahang (Ridley 1315), Raub Track (Machado); Penang Waterfall Garden (Curtis 68). Distrib. All warm countries. A weed in waste ground common. This seems to pass into *P. crus-galli* var. *frumentaceum* and some authors do not consider it specifically distinct. However it is much commoner here than any form of *P. crus-galli.*

§ 3. Brachiaria.

4. P. muticum, Forsk. Fl. Aeg. Arab. 20. A stout grass about 5-8 feet tall with the nodes bearded. Leaves linear acuminate 6 to 10 inches long, ¼-⅔ inch wide, sheaths usually hairy. Panicle 3 to 8 inches long, erect. Spikelets 1½ to 3 inches long, sometimes branched, glabrous. Spikelets crowded turgid pale green or purple ⅛ inch long. Glume I short obovate cuspidate. Glume II and III subequal, lanceolate acute 5 nerved, III paleate, IV shorter rounded ellipsoid, margins incurved. Stigmas purple. Schult. Mant. II. 225. Kunth. Enum. Pl. I. 93. Hook. fil. Fl. Brit. Ind. VII. 34. *P. amphibium,* Steud. Syn. Gram. 61. *P. barbinode,* Trim. Gram. Panic. 168. Sp. Gram. Ic. t. 318. *P. numidianum,* Lam. Ill. I. 122.

Commonly cultivated and occasionally occurring as an escape round Singapore. Distrib. Africa, India, Malay Isles and America.

5. P. distachyum, L. Mant. I. 138. A tall stiff tough grass with long creeping subterranean stolons, about 3 feet tall. Leaves linear or lanceolate glabrous or hairy edge thickened 3-5 inches long ¼ inch or less wide base broad sheath glabrous or hairy. Spikes 2-4, distant 1½ inch long. Spikelets ⅛ inch long ellipsoid pale in one or two rows sessile or shortly stalked on a narrow rachis. Glume I ovate subacute ½ as long as II, II and III subequal lanceolate subacute ribbed, IV coriaceous shorter ellipsoid strongly punctate rugulose pale on the back, sides inflexed. Stigmas purple. Retz. Obs. III. 17. Lam. Ill. t. 43. f. 2. Hook. fil. Fl. Brit. Ind. VII. 37. *P. subquadriparum,* Trim. Gram. Pan. 145. Sp. Gram. Ic. t. 186.

Singapore: Tanglin, Bukit Mandai (Ridley 5783), Changi (1755); Pahang: Pekan, Pulau Tawar; Province Wellesley: Bukit Juru, Telok Ayer Tawar (Ridley 7001). Distrib. India, China, Malaya, Australia. Common in sandy open ground, often a troublesome weed.

§ 4. Hymenachne.

6. P. indicum, L. Mant. II. 184. Stems slender 6-18 inches tall. Leaves lanceolate linear acuminate or linear 3 inches long $\frac{1}{8}$-inch wide base narrow, quite glabrous (hirsute form in India). Panicle spiciform on a long peduncle, dense with very short branches, $\frac{1}{2}$-1 inch long green glabrous. Spikelets $\frac{1}{8}$ inch long falcate. Glume I $\frac{1}{2}$-$\frac{1}{3}$ length of Glume III. Glume II ovoid or lanceolate cymbiform, 5 nerved, obtuse or subacute, III similar, IV very small about $\frac{1}{3}$ as long ovoid acute, thin. Retz. Obs. III. 9. Kunth. Enum. Pl. I. 133. Roxb. Fl. Ind. I. 285. Hook. fil. Fl. Brit. Ind. VII. 41. *P. angustum,* Trim. Sp. Gram. Ic. t. 334. *P. arcuatum,* Br. Prodr. 189. Griff. Notul. III. 39, 40. Ic. Pl. As. t. 147. f. I. *P. contractum,* Wight. and Arn. Steud. Syn. Gram. 84. *P. microstachyum,* Lam. Ill. I. 170. Kunth. l.c. 88. *Hymenachne indica,* Buhse. Miq. Fl. Ind. Bat. III. 458. *H. phalaroides,* Nees. Agrost. 276.

Singapore: Tanglin, etc.; Johor: Tanah Merah Road (Ridley 1708); Pahang: Pekan (Ridley 1570); Malacca: Selandor (Cantley's Coll.); Penang Waterfall (Curtis 1802). Distrib. Tropical Asia and Australia. "Rumput Bidis," "Rumput Bonto Darat." A common weed everywhere. The only form I have seen here is the var. *indicum* proper.

var. *gracile,* Hook. f. Stems tall and slender 18-24 inches. Spike 4 or 5 inches long.

Singapore: Ang Mo Kio (Ridley); Johor: Kuala Kahang (Kelsall H. B. S. 4109); Pahang: Khol, Tembeling River (Ridley 2818), Sungei Jelei (Machado); Dindings: Lumut (Ridley); Perak (Wray). This form has quite the habit of *P. myosuroides,* but the curved acute glumes of *P. indicum* true. The Pahang specimens and the ones from Lumut are remarkable for the glumes being very hairy.

7. P. myosuroides, Br. Prodr. 189. A tall slender grass about 12 to 24 inches tall. Leaves narrow linear acuminate 4-8 inches long $\frac{1}{8}$ to $\frac{1}{4}$ inch long glabrous. Panicle 3-6 inches long slender spiciform with closely appressed very short branches. Spikelets obovoid obtuse $\frac{1}{16}$ inch long. Glume I ovate obtuse $\frac{1}{3}$ length of No. III. II and III nearly equal, 5-7 nerved oblong obtuse. IV ellipsoid smooth shining. Kunth. Enum. Pl. I. 77. Hook. fil. Fl. Brit. Ind. VII. 42. *P. angustum,* Wight. Ic. 1612. *P. incurvatum,* Roxb. Fl. Ind. I. 286. (non L.).

Singapore: Kranji; Pahang: Pekan (Ridley); Johor: Kuala Sembrong (Kelsall H. B. S. 4122); Penang: Pulau Betong (Curtis 1960). Distrib. Africa, India, and China. Damp spots. "Rumput Bijau," "Rumput Humani." Among the specimens in the Singapore herbarium is one in which the panicle branches are longer and more spreading than usual, and one in which the dense spike has short $\frac{1}{2}$ inch leaves scattered through it.

8. P. MYURUS, H. B. K. Nov. Gen. and Sp. 1, 98. A tall grass, stems prostrate rooting at the base often very thick and spongy 2-6 feet tall $\frac{1}{8}$-$\frac{1}{4}$ inch in diameter. Leaves long linear acuminate base cordate 4-14 inches long $\frac{1}{4}$ to 1 inch wide ciliate at the base and mouth and edge of sheath. Panicle erect dense 8-14 inches long spiciform branches closely appressed. Spikelets very narrow $\frac{1}{6}$ inch long erect. Glume I lanceolate acuminate $\frac{1}{3}$ length of No. III. Gl. II lanceolate cuspidate tip ciliate, 5 nerved. Glume III lanceolate long cuspidate much longer, IV lanceolate acute thin shorter than II. Kunth. Revisio. Gram. I. 33. Enum. Pl. 1, 86. Hook. fil. Fl. Brit. Ind. VII. 39. *P. acutiglumum,* Steud. Syn. Gram. 66. *P. Hasskarlii,* Steud. Zoll. Syst. Verz. 54, Syn. Gram. 70. *P. serrulatum,* Roxb. Fl. Ind. I. 307. *Hymenachne Myurus,* Beauv. Agrost. 49. t. 10. f. 8.

Johor: Batu Pahat (Ridley 11005), Parit Jawa (Feilding); Sungei Ujong: Burunang (Cantley's Coll.); Pahang: Mahang (Ridley 1321); Province Wellesley: Permatang Bertam (Ridley); Penang (Curtis 1903). Distrib. Tropics generally. Occurs in grassy open swamps. "Rumput Kumpai."

9. P. AURITUM, Presl. Nees. Agrost. Braz. 176. Stems about 3 to 6 feet tall, as much as $\frac{1}{4}$ inch through at the base or less. Leaves linear lanceolate acuminate 6-10 inches long $\frac{1}{4}$-$1\frac{1}{2}$ inch wide base cordate broad glabrous or hairy beneath edge scabrid. Panicle long nodding much branched or contracted -18 inches long. Spikelets $\frac{1}{16}$-$\frac{1}{10}$ inch long green or purplish crowded on short branches ovoid, or fusiform. Glume I very short ovate obtuse or acute $\frac{1}{3}$ length of Glume III. Glume II shorter than III or subequal ovate oblong obtuse or subacute nerved. Glume III similar. Glume IV lanceolate acuminate smooth. Presl. Rel. Haenk. I. 305. Miq. Fl. Ind. Bat. III. 456. Hook. fil. Fl. Brit. Ind. VII. 40. *P. insulicola,* Steud. Syn. Gram. 78. *P. javanum,* Nees. and Buhse in Miq. Pl. Jungh. 376. Miq. Fl. Ind. Bat. l.c. 453.

Singapore Reservoir (Ridley 1695), Changi, Ang Mo Kio (81); Johor: Kuala Sembrong (Kelsall H. B. S. 4110); Malacca: Alor Gajah road (Ridley 5782); Pahang: Pekan (Ridley 1192), Tahan River (2830), Khol (2819); Selangor: Kuala Lumpur Caves (Ridley); Perak: Taiping Waterfall (Ridley); Jenah (Wray 1746); Province Wellesley: Krian; Penang Waterfall (Curtis 1818).

§ 5. Ptychophyllum.

10. P. plicatum, Lam. Encycl. IV. 736. A large perennial grass with creeping ascending stems 2-8 feet tall and as thick as a pencil, slightly flattened and solid. Leaves lanceolate acuminate plicate scabrid 12- inches long 4 inches wide, sheaths covered with short pungent hairs. Panicle compound nodding 18 inches long lax with slender branches over 6 inches long. Spikelets ovate acuminate subsessile $\frac{1}{8}$ inch long, glabrous. Glume I ovate $\frac{1}{2}$ as long as Glume III. Stigmas white. Jacq. Eclog. Gram. I. t. 1. Kunth. Enum. Pl. I. 94. Griff. Notul. III. 24. Ic. Pl. As. t. 139. fig. 229. Hook. fil. l.c. p. 55. *P. amplissimum,* Steud. Syn. Gram. 54. *P. asperatum,* Kunth. Revis. Gram. I. 39. *P. excurrens,* Trim. Pan. Gen. 131. *P. lene,* Steud. l.c. 54. *P. mauritianum,* Willd. Spreg. Syst. I. 305. *P. nepalense,* Spreng. l.c. 321. *P. nervosum,* Roxb. Fl. Ind. I. 311. *P. neurodes,* Schu. U. Mant. II. 228. *P. paucisetum,* Steud. l.c. 52. *P. palmifolium,* Koen. in Naturforscher XXIII. 208. *P. Wallichianum,* Nees. Fl. Austr. 49.

Johor: Pulau Aor (Feilding); Pahang: Tahan River (Ridley); Sungei Ujong: Pantai (Cantley's Coll.); Selangor: Kuala Lumpur Caves, Bukit Kutu (Ridley); Perak (Wray 3274). Distrib. India, Malaya, China. "Akar Pimpan." In rocky hill woods local.

§ 6. Effusae.

11. P. humile, Nees. Steud. Syn. Gram. 84. Annual tufted grass with slender stems -18 inches tall erect or geniculate glabrous. Leaves narrow linear acuminate glabrous, 3 inches long $\frac{1}{8}$ inch wide. Panicles lax spreading, broad terminal and axillary to the base of the stem, branches filiform. Spikelets long pedicelled solitary minute purple. Glume I ovate mucronate or acuminate $\frac{2}{3}$ length of III. Gl. II longer similar 3 nerved. IV shorter than III, ellipsoid yellowish smooth shining. Hook. fil. Fl. Brit. Ind. VII. 48. *P. tenellum,* Griff. Notul. IV. 21. Ic. Pl. As. t. 139. f. 194. not of Roxb.

Pahang: Pulau Tawar (Ridley 2142); Province Wellesley: Tasek Gelugur (6984). Distrib. India and Borneo. In dry open spots.

12. P. luzonense, Presl. Rel. Haenk. I. 308. Annual stems tufted -2 feet tall, moderately stout hairy leafy at the panicle. Leaves linear acuminate base broad 3-4 inches long $\frac{1}{4}$ inch wide closely hairy above and beneath, sheaths very hairy especially at the nodes. Panicle 6 inches to a foot long much branched, branches capillary rather stiff ciliate. Spikelets ovoid subacute $\frac{1}{16}$ inch long purple, glabrous. Glume I ovate obtuse nearly $\frac{1}{2}$ length of Gl. III. Gl. II oblong obtuse shorter than Gl. III, which is paleate. Gl. IV shorter

oblong smooth shining yellow or purple. *P. coesium,* Hook. Kew Journ. II. (1850)97. Hook. fil. Fl. Brit. Ind. VII. 48.

Singapore: Tanglin (Ridley 5787), Balestier Plain (6255); Johor: Kuala Sembrong (Kelsall H. B. S. 4106), Castlewood, Sungei Tebrau (Ridley 11500); Pahang: Pekan (Ridley 1262); Malacca (Griffith); Perak (Herb. Cantley 84), Blanja (Wray 115); Penang Waterfall (Curtis 1915). Common in open ground. Distrib. India, Malaya.

13. P. NODOSUM, Kunth. Enum. Pl. I, 97. Stems creeping and rooting at base ascending 1-4 feet slender glabrous. Leaves linear long acuminate 3-8 inches long $\frac{1}{4}$-$\frac{3}{4}$ inch wide finely ribbed edge not thickened. Panicle nodding at length spreading 3-8 inches long, branches slender, scabrid. Spikelets lanceolate acute narrow $\frac{1}{8}$ inch long purplish. Glume I ovate acuminate nearly half as long as III Glume II a little longer than Gl. I, 5 nerved. Glume III lanceolate ribbed epaleate. Glume IV elliptic lanceolate punctate pale smooth. Steud. Syn. Gram. 59. Hook. fil. Fl. Brit. VI. 43. *P. Arnottianum,* Nees. *P. multinode,* Presl. Rel. Haenk. I. 303.

Singapore: Chan Chu Kang (Ridley 1704), Tanglin; Johor: Serom, Batu Pahat (Ridley 11014); Pahang: Pekan (Ridley); Selangor: Kuala Lumpur Caves (Ridley 8475); Penang: Pulau Betong (Curtis 1961, 1917, 1918). Distrib. India, Malaya, China. Common in thickets and grassy meadows. "Rumput Mintabong," "Sarong Buaya."

14. P. MONTANUM, Roxb. Fl. Ind. I. 313. Stem slender 2 feet tall or more often woody. Leaves lanceolate acuminate base cordate 3-5 inches long $\frac{1}{2}$-$\frac{3}{4}$ inch wide, sparingly hairy on the nerves above, margins ciliate, nerves on the back conspicuous 10. Penicle very lax 6-8 inches long with spreading capillary branches. Spikelets $\frac{1}{16}$ inch long, subglobose. Glume I lanceolate acuminate nearly as long as Glume III hairy. Glume II and III ovate slightly hairy subequal. Gl. III epaleate. Glume IV as long as Gl. III semioval smooth. Kunth Enum. Pl. 126. Hook. fil. Fl. Brit. Ind. VII. 53. Trim. Fl. Ceyl. *P. courtallense,* Nees. Steud. Syn. Gram. 83. *P. euchroum,* Steud. l.c. 98.

Selangor: Kuala Kubu (Ridley 7779); Penang Woods in Waterfall Gardens (Ridley 7126). Distrib. India, China and Malay Islands. Inhabits dry rocky woods.

15. P. HUMIDORUM, Ham. in Wall. Cat. 8721. Hook. fil. Fl. Brit. Ind. VII. 53. var. *perakense.* A tall slender grass 3 or 4 feet high, stems $\frac{1}{8}$ inch through. Leaves narrow linear acuminate glabrous 6 inches long $\frac{1}{4}$-$\frac{1}{2}$ inch wide, base obscurely cordate, sheaths as long ciliate at the mouth. Panicle 9-12 inches long spreading with filiform branches, spikelets ellipsoid obtuse $\frac{1}{16}$ inch long purple. Glume

I ovate obtuse $\frac{2}{3}$ length of III. Gl. II and III elliptic obtuse 5 nerved. IV ovate smooth.

Johor: Sempang Kiri (Ridley 11007), Tebing Tinggi (11010); Perak (King's Coll. 2546). Distrib. of type India. Abundant in the water meadows and river above Batu Pahat. A very pretty grass.

16. P. ORYZOIDES, Sw. Prodr. 23. Fl. Ind. Occ. I. 61. Stem creeping and rooting, slender to moderately stout ascending 6 to 24 inches. Leaves 2-4 inches long $\frac{1}{4}$-$\frac{3}{4}$ inch wide lanceolate acuminate subdistichous glabrous edges sometimes thickened scabrous, sheaths glabrous except for hairs on the mouth and down the side. Panicle $1\frac{1}{2}$-14 inches long, in small form with few hardly spreading branches in large forms compound with distant trigonous scabrid branches 6 inches or more long. Spikelets $\frac{1}{8}$ to $\frac{1}{10}$ inch long green or purple. Glume I ovate nerved $\frac{1}{2}$ as long as Glume II or longer. Glume II lanceolate, obtuse nearly as long as III. Glume III, palea narrow. Glume IV shorter coriaceous granulate ellipsoid. Kunth. Enum. I. 129. Trim. Fl. Ceyl. V. 138. *P. Ridleyi,* Hack. Trans. Linn. Soc. Ser. II. ii. 401 (name only). *P. zizaniodes,* H. B. K. Nov. Gen. I. 100. *P. latifolium,* Hook. fil. Fl. Brit. Ind. VII. 39.

var. A. Dwarf creeping form with a short few-branched panicle.

Singapore: Gardens: Pahang: Kuala Berar, Pahang River (Ridley 2136), Pekan (1407); Province Wellesley: Telok Ayer Tawar (Ridley 7000).

var. *B. majus,* Hook. fil. Fl. Brit. Ind. VII. 39. Stem tall and stout, with long internodes, nodes hairy leaves broad with thickened edges. Panicle large and spreading with long branches.

Johor: Minyan Buku, Batu Pahat (Ridley), Kuala Kahang (Kelsall H. B. S. 4105), Kota Tinggi (Ridley 4221); Pahang: Kuala Tembeling (Ridley 2820); Selangor: Caves, Kuala Lumpur (Ridley 8158); Malacca: Bukit Bruang (R. Derry), (Griffith), Pulau Besar (Ridley 61, *P. Ridleyi,* Hack.); Perak: Goping (King's Coll.); Dindings: Gunong Tungul (Ridley 7264). Distrib. Tropical Africa, India and America. A very variable and common grass. The var. A grows in low swampy ground, var. B in thickets scrambling through the bushes.

17. P. PSILOPODIUM, Trim. Gram. Panic. 217. Annual. Stems rather slender simple or branched 1-2 feet tall, leafy to the panicle. Leaves narrow acuminate glabrous 3-8 inches long $\frac{1}{6}$-$\frac{1}{4}$ inch wide. Sheaths glabrous or hairy. Panicle 2-4 or 8 inches, rather compact or loose, pedicels slender as long as the spikelets. Spikelets $\frac{1}{8}$ inch long green or purplish, Gl. I ovate broader than long $\frac{1}{2}$ length of III or shorter, 3-5 nerved, II ovate acuminate 9-11 nerved, III as long, IV oblong or rounded obtuse shining dark brown. Nees.

Agrost. Braz. 199. Kunth. Enum. Pl. I. 100. Steud. Syn. Gram. 83. Hook. fil. Fl. Brit. Ind. l.c. 47.

Selangor: Port Swettenham (Bishop Hose). Distrib. India and Ceylon.

18. P. ELEGANTISSIMUM, Hook. fil. Fl. Brit. Ind. VII. 52. Perennial grass 2 or 3 feet tall, stems tufted slender leafy. Leaves numerous from near the base linear hairy acuminate 12-18 inches long. Panicle lax spreading 9 inches long branches scabrid filiform. Spikelets acute solitary or in pairs $\frac{1}{8}$ inch long glabrous. Glume I ovate acuminate keeled and ribbed, $\frac{1}{2}$ as long as III, stipitate. Gl. II ovate acuminate strongly ribbed at the tip. III as long similar paleate, palea $\frac{3}{4}$ length of Glume IV, which is elliptic obtuse smooth white, edges incurved.

Dindings on the top of the hill at Lumut (Ridley 3116). Endemic.

19. P. REPENS, L. Sp. Pl. Ed. II. 87. Stem creeping stout or slender, stoloniferous ascending 6-24 inches, bases of stems sometimes swollen. Leaves distichous 6-12 inches long linear narrow glaucous, or $\frac{1}{4}$ inch wide closely ribbed when dry, hispid or glabrous. Panicle narrow strict 3-6 inches long, pale, branches scabrid. Spikelets $\frac{1}{10}$ inch sessile or shortly pedicelled ovate lanceolate acute glabrous pale. Glume I very short, $\frac{1}{6}$ of Gl. III orbicular. II and III subequal ovate acute. III paleate or not, male. IV elliptic ovate smooth. Kunth. Enum. Pl. 1, 100. Hook. fil. Fl. Brit. Ind. VII. 49. *P. airoides,* Br. Prodr. 190. *P. aquatium,* A. Rich. Tent. Fl. Abyss. II 373. *P. arenarium,* Brot. Fl. Lus. I. 82. *P. coloratum,* Cav. Ic. II. 6. t. 110. *P. ischoemoides,* Retz. Obs. IV. 17.

Singapore: Changi (Ridley 1699); Johor: Sungei Tebrau (Ridley 11488); Pahang: Pekan; Malacca: Tanjong Kling, Ching (Ridley); Dindings: Lumut; Penang Waterfall (Curtis 1803); Province Wellesley: Permatang Bertam; Kelantan: Kamposa (Ridley). Distrib. All warm countries. Usually a seashore plant with often a stout subterranean rhizome.

20. P. PROLIFERUM, Lam. Encycl. IV. 747. Stem floating and ascending, base thick and spongy, about 1- feet tall glabrous leafy to the panicle. Leaves linear acuminate base broad 6-7 inches long $\frac{3}{8}$ inch wide mouth ciliate. Panicle 3 inches long branches appressed, scabrid. Spikelets green lanceolate acute $\frac{1}{8}$ inch long. Glume I ovate obtuse thin $\frac{1}{4}$ as long as the III. Gl. II and III lanceolate acuminate ribbed. Gl. III paleate or not. Gl. IV $\frac{3}{4}$ the length of III, elliptic obtuse smooth. Nees. Agrostolog. Braz. 170. Kunth. Enum. I. 100. Steud. Syn. Gram. 71. Hook. fil. Fl. Brit. Ind. VII. 50. *P. gongylodes,* Jacq. Eclog. Gram. III. t. 21. *P. elephantipes,*

Nees. Agrost. Braz. 165. *P. Elliottii,* Trim. Nees. l.c. 170. *P. fistulosum,* Hochst. Steud. l.c. 71. *P. natans,* Koen. Trim. Panic. Gen. 237. *P. paludosum,* Roxb. Fl. Ind. I. 307. Griff. Notul. 37. Ic. Pl. As. t. 139. f. 127.

Pahang. In swamps at Pekan (Ridley). Distrib. Tropics generally.

21. P. SARMENTOSUM, Roxb. Fl. Ind. I. 308. Perennial tall half scandent grass with a slender solid stem 6 to as much as 50 feet long pubescent or glabrous. Leaves usually long 5-12 inches long 1½-1½ inches wide linear lanceolate with a long point glabrous or pubescent, base narrowed, sheaths long smooth or slightly pubescent. Panicle long peduncled large compound spreading 8-12 inches branches capillary scabrid more or less whorled. Spikelets green pedicelled ⅛ inch long glabrous elliptic or ovoid blunt. Glume I ovate obtuse ½ as long as Gl. III. Glume II oblong obtuse thin as long as Gl. III, which is paleate, palea narrow. Glume IV shorter oblong obtuse transversely wrinkled. Anthers orange. Stigmas crimson. Kunth. Enum. Pl. I. 126. Hook. fil. l.c. 54. *P. microgonostum* and *P. vacillans,* Steud. l.c. 75. Miq. Fl. Ind. Bat. III. 456. *P. concinnum,* Nees. Hook. Kew. Journ. II. 1850, 97. Steud. l.c. 78. *P. incomptum,* Trim. Diss. II. 200.

Singapore: Grange Road, Sumbawang (Ridley 18), Changi (84); Johor: Kota Tinggi (Ridley 4207), Sungei Mati Road (Feilding H. B. S. 4112); Pahang: Raub (Machado); Malacca (Hullett), Machap (Derry 375); Selangor: Kampong Kerling (Ridley 10515), Rawang (7776); Perak: Taiping Waterfall (Ridley 3119), Larut (King's Coll. 2575); Penang: Moniot's Road (Curtis 1908); Province Wellesley: Ara Kudah (Ridley 6993). Distrib. India, China, Malaya. Common in woods. "Rumput Jangut Ali," "Poko Kulubong." Roots chewed with betel nuts an as *aphrodisiac.* A very beautiful grass often growing in dense masses.

22. P. MAXIMUM, Jacq. Ic. Pl. Rar. I. t. 13. Coll. I. 76. A large tufted grass 8-10 feet tall stems stout branched, nodes glabrous or bearded. Leaves linear 1-2 feet long ½ to 1 inch wide base rounded ciliate apex long acuminate. Panicle 1-2 feet long erect, branches slender filiform lower ones whorled. Spikelets shortly pedicelled ⅛ inch long green oglong. Glume I very short, ¼ length of Gl. III. Gl. II elliptic obtuse, little shorter than III, both smooth and obscurely nerved. Gl. III paleate. Glume IV elliptic obtuse transversely wrinkled shorter. Hook. fil. Fl. Brit. Ind. VII. 49. *P. altissum,* Brauss. Elench. Hort. Monsp. (1805) 42. *P. eburneum,* Trim. Pan. Gen. 180. *P. gongylodes,* Jacq. Eclog. Gram. 30. t. 21. *P. jumentorum,* Pers. Syn. I. 83. *P. laeve,* Lam. Ill. I. 172.

Singapore: Yo Chu Kang (Ridley 11292); Johor: Gunong Pulai; Perak: Larut Hills 4500 feet alt.; Penang: Glugor (Curtis 1901). Distrib. Africa, and cultivated all over the tropics for horse fodder, often cultivated in the peninsula and occurring sporadically in cultivated ground. The Guinea-grass.

23. P. OVALIFOLIUM, Poir. Encycl. IV. 279. Stems creeping and rooting slender, ascending 6 inches to a foot. Leaves ovate acuminate flaccid ½-2 inches long ½-¾ wide, base cordate amplexicaul glabrous or hairy, base of mouth of sheath ciliate. Panicle sessile or nearly so 2-4 inches lax spreading with slender filiform sinuous branches. Spikelets $\frac{1}{10}$ inch long solitary on slender pedicels, green or purplish hairy elliptic obtuse. Glumes I and II ovate obtuse strongly ribbed hairy, III flat obtuse glabrous little longer, with a long narrow palea, IV much shorter ellipsoid obtuse coriaceous smooth sides inflexed. Beauv. Fl. D'Owar III. 79. t. 110. f. 1. Kunth. Enum. Pl. 1, 113. Hook. fil. Fl. Brit. Ind. VII. 44. *P. brevifolium,* Roxb. Fl. Ind. I. 306.

Singapore: Government Hill (Ridley); Johor: Kota Tinggi; Pahang: Kuala Pahang (Ridley 995); Malacca: Bukit Bruang (Ridley 5786), Sungei Udang (Goodenough 1680); Perak (Wray 3644), Larut Hills at 3,000 feet, Bujong Malacca (Ridley 9613); Penang Waterfall (Curtis 496); Province Wellesley: Permatang Bertam (Ridley). Distrib. Africa, India, Malaya, China.

24. P. HIRTIFOLIUM, n.sp. Stem creeping decumbent, erect portion 6-8 inches long, leafy to the inflorescence. Leaves ovate lanceolate amplexicaule acute very hairy with long white cilia especially on the edge ½ inch long ¼ inch wide, sheaths strongly ribbed pilose. Panicle 1-2 inches long white ciliate branches slender spreading. Spikelets $\frac{1}{16}$ inch long solitary on the tops of the branches gibbous lanceolate dark green. Glume I lanceolate green hairy flat. Glume II as large and broader ribbed hairy ovate boat-shaped. Gl. III flat lanceolate shorter. Gl. IV white ovate obtuse coriaceous. Palea similar flattened.

Selangor: Semangkok Pass (Ridley 12046). This little plant is evidently allied to *P. ovalifolium,* Poir. but is smaller and more hairy. Endemic.

§ 7. GIBBOSAE.

25. P. PILIPES, Nees. and Arn. Miq. Pl. Junghuhn III. 376. A creeping and ascending grass slender geniculate, ciliate or glabrous at the nodes. Leaves linear lanceolate long acuminate 1¼-6 inches long ⅛-½ inch wide, glabrous or sparingly hairy above pubescent beneath sheaths ciliate. Panicle compact 1½-4 inches long, branches short. Spikelets crowded brown glabrous subglobose blunt $\frac{1}{16}$ inch long.

Glume I ½ length of No. III, ovate obtuse ribbed. Glume II ovate cymbiform, shorter than III. Glume IV semilunar flattened shortly stipitate rather large smooth. Miq. Fl. Ind. Bat. III. 453. Hook. fil. Fl. Brit. Ind. VII. 57. *P. hermaphroditum,* Steud. Syn. Gram. 67.

Singapore: Bukit Timah Road (Ridley 10418); Johor: Tebing Tinggi, Pulau Aur; Pahang: Tahan River (Ridley 2139); Malacca: Sungei Hudang, Pulau Besar; Sungei Ujong: Bukit Sulu (Cantley's Coll.); Perak: Larut (King's Coll. 2787), Relau Tujoh (Wray 1801); Dindings: Lumut (Ridley 5117); Province Wellesley: Tasek Gelugur (Ridley 6964). Distrib. Mascarene Islands, India, Malaya, Australia and Polynesia. Common by road sides. "Rumput Mutubong," "Rumput Kurubong Padi."

26. P. PATENS, Linn. Sp. Pl. 86. Stems slender creeping and ascending about 1-2 feet. Leaves lanceolate acuminate hispid above more so beneath 2-6 inches long ¼-1 inch wide. Panicle 6-9 inches long, with very long capillary branches and pedicels, eventually wide spreading. Spikelets minute globose pale, or brown. Glume I ⅓ to ½ the length of Glume III. Glume II semi-ovate cymbiform nearly as long as Glume III. Gl. IV semilunar gibbous, smooth yellow. Burm. Fl. Ind. t. 10. f. 2. Kunth. Enum. I. 126. Hook. fil. Fl. Brit. Ind. VII. 57. *P. accrescens,* Trim. Sp. Gram. Ic. t. 88. *P. obliquum,* Roth. Nov. Sp. 51. *P. radicans,* Retz. Obs. Iv. 18. *P. trigonum,* in part Thw. Enum. Pl. Zeyl. 359.

Singapore: Bukit Timah (Hullett 441), Tanglin, Changi (Ridley 77); Johor: Kwala Kahang (Kelsall H. B. S. 4108); Malacca: Ayer Moleh (Ridley), Hulu Rejang (Derry); Sungei Ujong: Port Dickson; Pahang: Tahan Woods (Ridley 2821); Dindings: Lumut (Ridley 3117); Penang: Government (Curtis 1916); Selangor: Klang (Fox). Distrib. India, Malaya, Polynesia. Common on the borders of woods etc. "Rumput Telor Ikan."

5. ICHNANTHUS, Sw.

Annual or perennial grasses with broad leaves. Inflorescence panicled. Spikelets 1 or 2 flowered ovate or lanceolate, terete articulate on the pedicels. Glumes 4, I, II and III subequal persistent strongly nerved, III paleate, IV much shorter deciduous, stipitate paleate bisexual oblong, with a simple or bifid or two appendages on the stipes. Styles free, stamens 3. Grain coriaceous acute or acuminate articulate at the base of the stipes.

Species 20. Tropics of both hemispheres.

I. PALENS, Munro. Benth. Fl. Hongk. 414. Stem slender long creeping with ascending branches 12 inches tall. Leaves lanceolate or ovate acuminate inaequilateral base broad, hairy 2-3 inches long ½-1

inch wide. Panicle 2-3 inches long compact branches short ascending scabrid. Spikelets shortly pedicelled $\frac{1}{8}$ inch long green glabrous lanceolate. Glume I lanceolate cuspidate $\frac{1}{2}$ as long as Gl. III. Gl. II lanceolate cuspidate strongly nerved. Nerves pubescent as long as Gl. III lanceolate acuminate paleate. Gl. IV obtuse elliptic smooth. Hook. fil. Fl. Brit. Ind. VII. 60. *Panicum pallens,* Swartz. Prod. 23. Kunth. Enum. I. 89.

Johor: Serom, Kota Tinggi; Selangor: Kuala Lumpur Caves (Ridley 8163), Near Labu (7775); Sungei Ujong: Bukit Sulu (Cantley's Coll.). Distrib. Tropics of both worlds. On banks of woods rather rare here.

6. Thysanolaena, Nees.

A very large reed-like grass. Stem solid. Leaves broad lanceolate sheaths short. Panicle very large lax branches long nodding bearing very numerous short spikes. Spikelets densely crowded subsecund purple, pedicelled. Glumes 4. Gl. I and II short subequal ovate. Glume III lanceolate acuminate three times as long. Gl. IV shorter lanceolate thin acute green, covered with long white hairs. Stamens 2 or 3. Anthers short oblong greenish yellow. Styles free brown purple. Grain minute free.

Species 1. India and Malaya.

Th. Agrostis, Nees. Edinb. Phil. Journ XVIII. 180. Stems 8 to 12 feet tall $\frac{1}{4}$ inch through. Leaves 18-24 inches, 3-4 inches across smooth green paler beneath, acuminate, base cordate subpetioled, sheaths 1-1$\frac{1}{4}$ inch long mouths hairy, ligule very short. Panicle 1-2$\frac{1}{2}$ feet tall, branches about a foot or less. Spikes $\frac{1}{8}$-$\frac{1}{2}$ inch. Spikelets $\frac{1}{20}$ inch long, pedicels hairy. Glume I, II and III purple. Steud. Syn. Gram. 119. Hook. fil. l.c. 61. *Th. acarifera,* Arn. and Nees. Nov. Act. Nat. Cur. XIX. Supp. 1, 181. *Panicum acariferum,* Trin. Sp. Gram. Ic. t. 87. *Myriachaeta arundinacea* and *glauca,* Zoll. and Mor. Syst. Verz. Zoll. 101. Steud. l.c. 404. *Melica latifolia,* Roxb. Fl. Ind. I. 328. *Agrostis maxima,* Roxb. l.c. 317.

Perak: Hermitage Hill (Ridley); Sungei Ujong (Herb Cantley); Selangor: Pahang Track (Machado); Penang: Government Hill (Curtis 1909). Hill woods on banks. "Buluh Tubarow."

7. Setaria, Beauv.

Annual grasses, with dense spiciform panicles. Spikelets I flowered (rarely 2 flowered) clusters not awned, articulate on very short pedicels, bearing a persistent involucel of few or many scabrid bristles (barren branchlets). Glumes 4. I half as long as III, II as long or shorter than IV, III neuter epaleate, rarely male. IV coriaceous plano-convex bisexual. Stamens 3. Grain free.

Species about 10. All warm and temperate regions.

Panicles large nodding .. .. 1. *S. italica.*
Panicle erect spike-like simple .. .. .. 2. *S. glauca.*

1. S. ITALICA, Beauv. Agrost. 51. Stem 2 to 5 feet tall stout. Leaves 18 inches long 1 inch across or less. Panicle 8 inches long very thick nodding cylindric or compound. Bristles 2 or 3 smooth or scabrid long. Spikelets $\frac{1}{16}$ inch long. Glumes membranous. I short ovate, II and III subequal oblong, IV coriaceous smooth hemispheric. Hook. fil. Fl. Brit. Ind. VII. 78. *Panicum italicum,* L. Sp. Pl. 56.

The Italian millet only known in cultivation occurs occasionally in waste ground, in Pahang. Pulau Tawar, Pulau Rumput and Sungei Chenei. It is known as Iskoi by the Malays and is very seldom cultivated.

2. S. GLAUCA, Beauv. Agrosto. 51. A tufted annual, about 1-2 feet tall slender. Leaves narrow linear 6 inches long $\frac{1}{8}$- inch wide scabrid. Panicle narrowly cylindric $\frac{1}{2}$-5 inches long orange, occasionally purplish dense. Bristles 6 to 12 to a spikelet variable in length $\frac{1}{4}$-$\frac{1}{4}$ inch long orange. Spikelets green $\frac{1}{8}$ inch long ovoid. Glume I and II short ovate about $\frac{1}{2}$ as long as hemispheric wrinkled blunt. Kunth. Enum. Pl. I. 149. Griff. Notul. 44. Ic. Pl. As. t. 149. f. 1. Hook. fil. Fl. Brit. Ind. VII. 79. *S. helvola,* R. & S. *S. dasyura,* Schlecht Linnaea XXVI. 463. *Panicum glaucum,* L. Sp. Pl. 56. *P. helvolum,* Linn. f. Suppl. 107.

Singapore: Tanglin (Ridley 5767); Johor: Castlewood, Sungei Tebrau (Ridley 11502); Pahang: Kuala Luit, Pekan (Ridley); Malacca: Sungei Bahru (Ridley 10792), Chenana Putih (Cantley's Coll.); Perak (Wray); Penang: Paddy fields (Curtis 1959). Distrib. whole world. A very variable plant. Hackel names the long spiked forms *S. dasyura,* Schlecht and the short ones *S. glauca,* but they appear to pass into each other. It occurs as a weed in waste ground and in dry spots. "Rumput Julong-Julong."

8. AXONOPUS, Beauv.

Perennial grasses slender. Panicle of few slender branches. Spikelets 2 flowered. Glumes 4. Gl. I short ovate acuminate glabrous, II thin glabrous, with 3 stamens, and a bifid palea, IV elliptic or oblong awned.

Species 2. Africa, Asia, Australia.

A. CIMICINUS, Beauv. Agrost. 12. Stems tall slender 1-4 feet tall decumbent and geniculate at the base. Leaves ovate lanceolate distant subacute, amplexicaul at the base 3 inches long $\frac{3}{4}$ inch wide edges ciliate ligule a ring of hairs sheaths 3 inches long cilate. Panicle of few long slender subwhorled branches flowerless. Glume I lanceolate acuminate $\frac{1}{2}$ of Gl. III. Gl. II much the largest lanceolate acute

fringed with long reddish bristles, II narrower thinner and shorter with a bifid short palea, 3 stamens. Gl. IV subcoriaceous elliptic awned. *Panicum cimicinum*, Retz. Obs. III. 9. Roxb. Fl. Ind. I. 295. *Urochloa cimicina*, Nees. in Edinb. N. Phil. Journ. XV. 381.

Singapore: Tivoli, Changi (Ridley 1700, 1711); Penang: Waterfall, Tanjong Bunga (Curtis 1829). Distrib. India, Malaya, China. A weed in waste ground. Pleasantly scented like *anthoxanthum* when dry.

9. Oplismenus, Beauv.

Slender creeping grasses, with thin ovate or lanceolate leaves. Spikes simple or panicled spikelets 1 flowered sessile or nearly so, fascicled. Glumes 4. Glume I short with a long straight awn, II with or without an awn, III longer, awn short paleate, barren, IV lanceolate acute. Stamens 3.

Species 4 or 5. All tropical countries. Woodland grasses.

Leaves ½-1¼ inch long	1. *O. Burmanni.*
Leaves 2-7 inches long	2. *O. compositus.*

1. O. Burmanni, Beauv. Agrost. 54. Creeping decumbent grasses, with slender stems erect about 8 inches. Leaves ovate lanceolate or lanceolate ½-1¼ inch long ¼ inch wide acute hairy. Spikelets few 4 or 5, secund short ¼-½ inch long hairy. Spikelets crowded imbricate $\frac{1}{10}$-⅛ inch long (without the glumes). Glume I lanceolate hairy awned. Gl. II about as long, awn much longer, hairy. Gl. III a little longer, awn shorter. Glume IV smooth lanceolate acute. Hook. fil. Fl. Brit. Ind. VII. 66.

Penang: Sepoy Lines (Curtis 1825), Botanic Gardens. Distrib. Tropics of the old world.

2. O. compositus, Beauv. Agrost. 54. Slender creeping ascending grass 1-2 feet tall. Leaves lanceolate acute base broad inaequilateral 3-5 inches long ¼-1 inch wide glabrous above pubescent beneath sheaths glabrous. Spikes 5 or 6, 1-4 inches long bristly. Spikelets ⅛ inch long (without the awn) solitary or fascicled in twos and threes mostly secund. Glume I lanceolate awned. Gl. II longer or shorter, awn very long, III longer and broader obtuse 7-9 nerved hispid. IV lanceolate polished acuminate. Hook. fil. Fl. Brit. Ind. Vol. VII. 66.

Johor: Pulau Tinggi (Feilding); Pahang: Kuala Pahang (Ridley 999); Selangor: Kuala Caves (Ridley 8162); Malacca: Durian Tungul; Penang: Waterfall (Ridley 7069, 7070). Distrib. Tropical Regions.

10. Stenotaphrum, Trin.

Broad leaved creeping grasses with flattened stems and distichous leaves. Spikes flat, rachis broad herbaceous with the spikelets on short branches partly sunk in the rachis. Spikelets ovate acute usually in two rows. Glumes 4 unawned, I short and broad, II convex lanceolate, III as long, paleate, IV as large coriaceous bisexual, palea large ovate grain broad flattened free.

Species 2 or 3. Tropics of both worlds.

S. Helferi, Munro. Hook. fil. Fl. Brit. Ind. VII. 91. Stems 1-2 feet long, base decumbent geniculate flattened. Leaves flat dark green linear or lanceolate linear acute base broad 4-6 inches long $\frac{3}{8}$ inch wide. Sheaths long flattened 2 inches or less. Spike 4 inches long $\frac{1}{4}$ inch wide, flat straight. Spikelets 2-5 or short branches $\frac{1}{6}$ inch long. Glume I ovate obtuse more than half as long as Gl. III, 5-7 ribbed. Glume II lanceolate 7 nerved, III as long 5 nerved paleate male.

Perak: Plus River (Wray 3364), Padang Rengas (Ridley); Province Wellesley: Permatang Bertam (Ridley 6968); Kedah: Bukit Juru (King's Coll.). Distrib. Tenasserim, Cochin China. Damp spots.

11. Thuarea, Pers.

A slender prostrate branched creeping grass. Leaves flat lanceolate acute, with broad sheaths. Spikes terminal short enclosed in a leaf-sheath. Spikelets few secund, in one row, basal one or two female or bisexual terminal 2 to 6 male, rachis flat pubescent eventually enclosing the fruit. Glume I small or obtuse in male, II ovate or lanceolate, empty, III and IV lanceolate acute, triandrous in male spikelets bisexual in the lower one. Anthers linear. Stigmas long plumose. Grain enclosed in the thickened hard base of the rachis, forming an obconic beaked nut.

Species 1. Madagascar, Ceylon, Nicobar, Malaya to Polynesia.

Th. sarmentosa, Pers. Syn. 1, 110. Stem several feet long wiry branches 3 inches long. Leaves $\frac{3}{4}$ to 2 inches long $\frac{1}{4}$-$\frac{1}{5}$ inch wide bright green sheaths broad as long. Spike $\frac{1}{2}$ to 1 inch long. Spikelets $\frac{1}{6}$ inch long. Fruit $\frac{1}{4}$ inch long. Kunth. Revis. Gram. I. 247, t. 35. Enum. Pl. I. 174. Suppl. 128. Beauv. Agrost. 127, t. 22, f. 9. Hook. fil. l.c. 91. *T. latifolia* and *T. media, T. involuta,* Br. Prodr. 197. *Ornithocephalochloa arenicola,* Kurz. Journ. Bot. 1875, 332. t. 171. *Ischaemen involutum,* Forst. Prodr. 73.

Singapore: Rochor, Changi (Ridley); Johor: Jambu Larang (Feilding H. B. S. 5766); Pahang: Rumpin River, Sungei Meyang (Ridley); Province Wellesley: Teluk Ayer Tawar (Ridley); Kedah: Yan. Seashores creeping in sand, common.

12. Spinifex, L.

Stiff bushy or creeping grasses, with long stiff glaucous rigid arrow leaves. Male panicle branched of umbellate with membranous bracts at base. Spikelets sessile or branches of the umbel, rather large sessile or subsessile, 2 flowered. Glumes membranous not awned. Glumes I and II subequal lanceolate empty. Glumes III and IV paleate longer acuminate cuspidate triandrous. Anthers long oblong. Female inflorescence of one or two large heads of radiating bracts with very long points. Glumes as in male but rather larger, III empty or triandrous, IV female. Lodicules large, 2. Styles 2, long.

Species 4. All but one Australian.

S. squarrosus, L. Mant. II. 300. Stems ascending about a foot glaucous. Leaves narrow 3-7 inches long subterete at top pungent recurved, sheaths broad truncate imbricating, all silky pubescent. Male inflorescence of 3 corymbs, the terminal one largest, 3 inches long 4 inches wide branches scabrid terminated by an acute point. Spikelets nearly $\frac{1}{2}$ inch long pubescent pale. Gl. I, II 3-7 nerved, lanceolate. Gl. III and IV longer paleae nearly as long, hairy along the keel. Female heads large with bracts eventually very long over 6 inches slender scabrid. Spikelets glabrous. Glumes all lanceolate pubescent at the tip. Lamarck. Illustr. t. 840. Kunth. Enum. Pl. I. 175. Miq. Fl. Ind. Bat. III. 474. Hook. fil. l.c. 63. *Stipa spinifex,* L. Mant. I. 84.

Johor: Jambu Larang (Feilding); Pahang: Sungei Meang (Ridley 1527), Kuala Pahang: Cherating River. Distrib. India, Siam, Ceylon, Java, China.

In sand along the shore, on the East Coast. The fruiting heads become detached when ripe and are blown along the sand on the points of the bracts in a very curious way.

Tribe II. Oryzeae.

13. Oryza, L.

Tall annual or perennial grasses. Leaves linear, long. Spikelets 1 flowered in racemes or loose panicles, disarticulating from the pedicels laterally strongly compressed often awned. Glumes I to III developed, I and II very minute or absent, III half oblong hard keeled 5 veined, margin thickened awnless, or awned, awn straight scabrid. Palea linear as long coriaceous edges membranous. Stamens 6. Grain narrowly oblong compressed closely invested by the glume or adnate to them.

Species 5 or 6. Tropical Asiatic. Padi (*O. sativa,* L.) a native of India is extensively cultivated here, but I have not seen it wild.

Glume III keeled, not ciliate .. .. .. 1. *O. Ridleyi.*
Glume III armed with white processes .. 2. *O. latifolia.*

1. O. Ridleyi, Hook. fil. Fl. Brit. Ind. VII. 93. A tall weak grass, 3 or 4 feet tall. Leaves linear acuminate 6-14 inches long ¼-1 inch wide glabrous nerves distinct ligule long oblong ciliate. Panicle 6-12 inches long nodding with parallel slender branches alternate or subopposite, 4-6 inches long. Spikelets ¼ inch long exclusive of awn. Glumes I and II setaceous scabrid. Gl. III boat-shaped keeled. Keel spinulose, awn nearly as long. Palea keeled spinulose not awned. Stamens III orange short. Stigmas 2 plumose.

Johor: Tebing Tinggi (Ridley 1011), Kuala Sembrong (Kelsall H. B. S. 4100); Pahang: Pekan (Ridley 1215); Malacca: Chabau (Ridley 1007); Selangor: Kajang Road; Perak: Kuala Kangsa. Distrib. Borneo. In waste meadows and wet spots by river banks.

2. O. latifolia, Desv. Journ. Bot. I. (1813) 77. Stems 2-3 feet tall. Leaves 14 inches long, ½ inch wide, linear acuminate, edges and back scabrid narrowed at the base, ligule rather long ciliate ⅛ inch. Panicle 6-8 inches long, branches slender appressed. Spikelets elliptic oblong ⅛-⅙ inch long. Glume I and II lanceolate setaceous scabrid very short. Glume III boat-shaped granulate and covered with white processes channelled on both sides, awn scabrid ½ inch long brittle. Palea similar but narrower and shortly cuspidate.

Johor: Sempang Kiri (Ridley 1019), Parit Jawa (Feilding); Perak: Kuala Dipang (Ridley 9791). Wet fields. "Padi Burong."

14. Leersia, S. W.

Tall slender marsh grasses with narrow flat leaves and a terminal panicle of the flowered spikelets, articulate on thin pedicels. Glumes I and II absent. Glume III boat-shaped flattened thinly coriaceous keeled. Keel ciliate, not awned. Palea as long narrower keeled and ciliate. Lodicules 2. Stamens 6 or fewer. Styles short, stigmas plumose. Grain narrowly oblong.

Species 7.

S. hexandra, S. W. Prod. Veg. Ind. Occ. 21. Stems 2-3 feet tall slender. Leaves narrow 2-6 inches long ⅛ to ⅛ inch wide linear acuminate, ligule rather long, rounded. Panicle 3-4 inches long branches contracted together 1 inch long or less. Spikelets pale green, ⅛ inch long. Glume slightly granulate. Stamens 6. Kunth. Enum. Pl. I. 6. Hook. fil. Fl. Brit. Ind. VII. 94. Trimen. Fl. Ceyl. V. 184. *L. Australis,* R. Br. Prodr. 210. *L. ciliata,* Roxb. Fl. Ind. II. 207. *L. ciliaris,* Griff. Notul. III. 2. *Pharus ciliatus,* Retz. Obs. V. 23. *Pseudoryza ciliata,* Griff. Ic. Pl. As. t. 144. f. 1.

Singapore: Tanglin, etc. (Ridley); Johor: Batu Pahat; Pahang: Pekan (Ridley 1154); Malacca: Ayer Panas; Perak: Kuala Dipang. Distrib. All tropics. In water meadows. One of the best fodder grasses, very common.

Tribe III. Zoysieae.

15. Zoysia, Willd.

A small tufted or creeping grass with slender stems leafy above branched glabrous usually rigid. Leaves subulate pungent. Panicle spiciform on a wiry peduncle. Spikelets very small one flowered lanceolate or ovoid pedicelled on the simple rachis. Glumes 2. Gl. I coriaceous lanceolate, involute. Gl. II shorter and narrower thin, palea small or absent. Styles long distinct.

Species I. Mauritius, Tropical Asia and Australia.

Z. pungens, Willd. Ges. Natur. fr. Neue. Schrifte. III. 441. Stems wiry matter 3-12 inches long. Leaves very slender ½-1½ inch long. Panicle ½-1 inch long. Spikelets ⅛ inch long. Glume I pale green darker edges, or tinted violet, mucronulate pubescent. Glume II hyaline. Stamens 3, anthers oblong speckled violet. Styles white. Kunth. Enum. Pl. I. 471. Beauv. Agrost. I. t. 4. f. 1. Hook. fil. Fl. Brit. Ind. VII. 99. *Z. artistata, Brownii, Griffithiana, sedoides,* C. Muell. Bot. Zeit. XIII. 272-274. *Z. japonica,* Weuld. Steud. Syn. Gram. 414. *Z. sinica,* Hance. Journ. Bot. VII. 168. *Z. tenuifolia,* Trim. Mem. Acad. Ptersb. Ser. VI., IV., Sc. Nat. II. 96. *Matrella juncea,* Pers. Syn. I. 78. *Agrostis Matrella,* L. Mant. II. 185.

Singapore: Balestier Plain, Tanjong Rhu (Ridley 5765); Johor: Hulu Sedili (Kelsall); Malacca: Tanjong Kling (Ridley 3125, 3124), Malacca Hill (5765); Pahang: Kuala Pahang (Ridley). Sandy spots often forming a dense turf, somewhat variable according to locality, taller and softer in wet places, very common.

16. Perotis, Ait.

A short creeping grass, with small broad leaves. Spikelets in a single terminal spike shortly pedicelled or subsessile short one flowered. Glumes 3. I and II empty narrowly linear tapering into long awns. III minute paleate.

Species 1. Tropical Africa, Asia and Australia.

P. latifolia, Ait. Hort. Kew I. 85. Stems 3 inches to 1 foot long. Leaves lanceolate ¼-¾ inch long ⅛-⅙ inch long numerous at the base distant above base broad, ciliate, apex acute. Spike 3-5 inches long. Spikelets purple nearly ½ inch long with the awns. Beauv.

Agrost. t. 4. f. 9. Hook. fil. Fl. Brit. Ind. VII. 98. *P. rara,* Br. Prodr. 172. *Saccharum spicatum,* L. Sp. Pl. 54. *Agrostis spicaeformis,* L. G. Suppl. 108. *Authoxanthum indicum,* L. Sp. Pl. 28. *xystidium barbatum,* Presl. Rel. Haenk. I. 228.

Singapore: Changi (Ridley); Pahang: Kuala Pahang; Malacca: Bukit Sabukor (Goodenough 1967); Penang: Telok Bahang (Curtis 9), Tanjong Bunga (1817). Sandy spots.

Tribe IV. Phareae.

17. Leptaspis, Br.

Forest grasses perennial, with broad petioled elliptic or oblong leaves. Panicles terminal peduncled with the branches whorled eventually spreading with short alternate branchlets. Spikelets unisexual on short pedicels. Males very small in the upper part. Glumes 3. I and II broad flat unequal glabrous.

Species 3-4. Tropics of old world.

L. urceolata, Br. Benn. Pl. Jav. Rar. 23. t. 6. Rootstock creeping often raised above the ground on stiff roots. Stem 1-3 feet base covered with sheathing leaves. Leaves 6-12 inches long 2-3 across elliptic or lanceolate acute narrowed at base, stiff dark green, with trabeculate nervules, with a petiole 1 inch or more long. Panicle branches 6 inches or more long pubescent numerous. Female spikelets $\frac{1}{6}$ inch long. Utricles pear-shaped $\frac{1}{4}$ inch long viscidly hairy. Miq. Fl. Ind. Bat. II. 374. Hook. fil. Fl. Brit. Ind. VII. 95. *L. zeylanicus,* and *manillensis,* Steud. Syn. Gram. 8. *Pharus urceolatus,* Roxb. Fl. Ind. III. 611.

Singapore: Bukit Timah, Chan Chu Kang (Ridley 1707), Pulau Ubin (369); Johor: Kuala Sembrong (Kelsall), Batu Pahat; Malacca: Bukit Sadanen (Derry 259), Ophir (Hullett 853); Pahang: Pulau Jallam, Pahang River (Ridley); Selangor: Kuala Lumpur; Perak: Bujong Malacca (Curtis), Tapa (Wray 1313); Penang (Roxburgh), Balik Pulau (Ridley 9418). Distrib. Ceylon Malay Islands to New Guinea. Common in dense forest. Native names "Tampo Rulang," "Tampo G'lang," "Sayong Tikus," "Rumput Babi."

Tribe V. Maydiae.

18. Coix, L.

Tall annual or perennial grass. Leaves large. Spikes many axillary and terminal. Lower spikelet female enclosed in bract at length hardened polished white or blue. Male spikelets on a peduncle protruding through the female bract, shortly pedicelled or sessile

lanceolate. Glumes 4. I and II lanceolate subequal stiff or herbaceous empty. III and IV thin hyaline paleate triandrous or empty. Stamens linear. Female ovoid acuminate. Gl. I chartaceous, II-IV thinner, IV paleate. Grain orbicular enclosed in hard globose or ovoid involucre.

Species 1.

C. Lachryma Jobi, L. Sp. Pl. 972. Stems 3-4 feet tall. Leaves lanceolate long acuminate base broad, 9 inches long, 1½ inch broad keeled. Panicles 3 inches long. Male portion 1 inch, spikelets ¼ inch. Fruit obovoid ⅜ inch long. Bot. Mag. t. 2479. Griff. Notul. III. 10. Hook. fil. Fl. Brit. Ind. VII. 100. *C. agrestis,* Lour. Fl. Cochinch. 551. *C. arundinacea,* Lam. Encycl. III. 422.

Common in waste ground, but not native. Singapore: Tanglin, etc.; Sungei Ujong: Bukit Tumajang (Cantley's Coll.); Penang (Curtis 58); Perak: Tomoh (Machado). Distrib. Tropical Asia and as a cultivated plant in Africa and America. Native name "Jilai Batu," "Mulai Tikus."

var. *gigantea.* Perennial, 10 to 15 feet tall. Leaves 18 inches to 2 feet long, 1½ across. Male spikes long 3 inches in cylindric drooping spikes. Glumes broadly winged half an inch long obtuse. *C. gigantea,* Roxb. Fl. Ind. III. 569. *C. lingulata,* Hack. Oestr. Bot. Zeitsch. 1891. 5.

Perak: Banks of Kinta River (King's Coll. 7212).

Andropogoneae.

19. Dimeria, Br.

Annual or perennial grasses small. Leaves narrow linear. Spikes solitary or several terminal. Spikelets very small 1 flowered rachis inarticulate. Glumes 4. I linear, II as long broader, compressed, III narrow shorter hyaline, IV longer awned, awn twisted. Stamens 2, small. Styles distinct. Grain linear.

Species 12. Tropical Asia and Japan.

D. ornithopoda, Trim. Fund. Agrost. 167. t. 14. Annual, 6-30 inches tall slender. Leaves linear acuminate 1-3 inches long sprinkled with long white hairs. Stems capillary pink. Spikes 2 subopposite very slender 1½ inch long rachis flexuous pink. Spikelets closely appressed $\frac{1}{16}$ inch long without the awn linear sessile. Glume I linear acute pink keel ciliate. II as long and broader strongly ciliate at the top, III shorter linear hyaline, IV longer with a very long scabrid brown awn. Hack. Monogr. Androp. 81. Hook. fil. Fl. Brit. Ind. VII. 104. *D. stipaeformis,* Miq. Prolus. Fl. Jap. 176. *D. tenera,* Trim. Mem. Acad. St. Petersb. ser. 6. Vol. II. p. 335.

Didactylon simplex and *ramosum,* Zoll. and Mor. Syst. Verz. 100. *Andropogon filiformis,* Roxb. Fl. Ind. 1. 256.

Singapore: Seletar, Tanglin, Changi (Ridley 79, 1703); Negri Sembilan: Seremban (Ridley 10013). Distrib. India, Malaya, Japan, Australia.

20. Imperata, Cyrillo.

Perennial grasses with a long subterranean creeping rhizome. Leaves tufted long linear acuminate. Peduncle tall. Panicle spiciform, woolly silky simple or branched. Spikelets small binate 1-2 flowered, lower flower incomplete or absent. Glumes 4.

Species 4. Europe, Asia and America.

Panicle spikelike not branched, stamens 2 .. 1. *I. arundinacea.*
Panicle distinctly branched, stamen 1 .. 2. *I. exaltata.*

1. I. arundinacea, Cyrillo. Pl. Rar. Neap. Fasc. II. 26. t. 11. Rhizomes very long branched covered with scales. Leaves 1 to 6 feet long ¼-⅜ wide linear acuminate. Stem 1 to 3 feet, tall slender solid, nodes glabrous or bearded. Panicles 3 to 8 inches long very narrow spiciform with very short appressed branches. Spikelets shortly pedicelled base and glumes covered with long white silky hairs. Glume I and II lanceolate acute thin purple or green, III much shorter about ½ or ⅓ oblong toothed, IV ovate acute toothed. Palea quadrate toothed. Anthers orange cells divaricate at base. Stigmas long plumose purple. Kunth. Enum. Pl. 1, 477. Hackel. Andropoyp. 91. Hook. fil. Fl. Brit. Ind. VII. 106. Duthie. Indig. Fodder grass t. 15. *I. Allang,* Jungh. Tydschr. Nat. Ges. VII. 295. *I. cylindrica* and *I. Koenigii,* Beauv. Agrost. 165. *Saccharum cylindricum,* Lam. Encycl. I. 594. *S. diandum* Koen. *S. Koenigii,* Retz. Ibs. V. 16.

Common all over the whole peninsula. Native name "Lalang." A pestilential grass very difficult to eradicate, covering large areas of country and of very rapid growth. The leaves are used for thatching, and litter, the silky spikelets for stuffing pillows, and the rhizomes for making a kind of beer and also as a native medicine for which purpose it is exported to China. Distrib. all warm countries.

2. I. exaltata, Brngn. Voy. Coq. Bot. 101. Stems 6-7 feet tall, stouter than the preceding, nodes glabrous. Leaves linear acuminate, rather longer and broader. Panicle 14 inches long with several branches at the base silky white. Spikelets narrow lanceolate ⅛ inch long hairs silky softer than in preceding. Glume I fewer nerved. Glume III half as long as Gl. II oblong toothed. Hack. Monogr. Androp. 99. Hook. fil. l.c. 107. *I. caudata,* Trim. Mem. Acad.

Petersb. Ser. VI. ii. 1833, 331. *I. ramosa,* Anderss. Oefvers. Vet. Akad. Stockh. 1855, 158.

Singapore (Cuming), Seletar, Bajau (5775); Johor: Batu Pahat, Tanjong Kupang (Ridley 5774); Dindings: Lumut; Selangor: Langat (Ridley 54). Distrib. Tenasserim, Malay Islands, Trop. America. Common near villages and on the sea coasts. "Lalang Jawa."

21. Saccharum, L.

Large perennial grasses, with numerous solid or fistular stems in a tuft, and linear leaves. Panicles large and long peduncles, rachis fragile, spikelets in pairs one sessile and one pedicelled, both similar linear oblong or oblong bisexual. Glumes I and II equal blunt or II mucronate, III empty hyaline, IV bisexual. Palea small hyaline nerveless. Stamens 3.

Species 12. Africa, Trop. Asia and America.

Panicle lax, white silky, callus, hairs long silky 1. *S. arundinaceum.*
Panicle dense purple, callus hairs shorter than the spikelet .. .. 2. *S. Ridleyi.*

1. S. arundinaceum, Retz. Obs. 4. p. 14. Stems 10 to 15 feet tall, one inch through solid. Leaves 3 to 5 feet long, 2-3 inches wide margins hispidly ciliate, acuminate, midrib white. Panicle 1-2 feet long much branched, oblong, branches half whorled softly hairy. Spikelets narrow lanceolate in pairs one sessile and one pedicelled $\frac{1}{8}$ inch long, white silky callus hairs longer. Glume I lanceolate acuminate, II similar as long, both reddish, III elliptic lanceolate, IV mucronate. Hack. Monogr. Androp. 117. Hook. fil. l.c. *S. bengalense,* Retz. Obs. 5. p. 162. *S. procerum,* Roxb. Fl. Ind. I. 243.

Singapore: Yeo Chu Kang, Kallang (Ridley 10800); Pahang: Pulau Tawar, Pekan (Ridley 1202); Selangor: Kuala Lumpur Caves (Ridley 54); Perak River (King's Coll. 1095). Distrib. India, China. Common on river banks. "Tebrau."

S. officinarum, L. The sugarcane "Tebu" of the Malays is commonly cultivated.

2. S. Ridleyi, Hack. Oesterr. Bot. Zeitschr. 1891. A tall grass forming huge clumps. Leaves long linear acuminate $\frac{1}{2}$ inch across glabrous margins scabrid, sheaths smooth stems 8 feet tall, $\frac{1}{4}$ inch through solid. Panicle 14-16 inches long purple. Spikelets in pairs one sessile and one pedunculed $\frac{1}{8}$ inch long lanceolate shining nodes of branches and base of spikelet covered with white hairs shorter than the spikelet. Glume I lanceolate acute cartilaginous, II about as long ciliate at the top, III and IV shorter hyaline ciliate at the tip.

Stamens purple red 3. Stigmas purple. Hook. fil. Fl. Brit. Ind. VII. p.

Pahang River Banks: Pekan and Mahang (Ridley 1159, 1306). Endemic. Abundant in this district covering considerably tracts of the low open country along the river.

22. Pogonatherum, Beauv.

Tufted annual or perennial grasses, with linear acute leaves, and slender simple or branched stems. Spikes solitary terminal slender. Spikelets small in pairs, 1 sessile and 1 shortly pedicelled. Glumes thin membranous, I mutiocus, II longer awned apex 2 toothed, III hyaline empty, or male with 2 stamens, IV hyaline bifid with a long awn. Palea about as long. Lodicules absent. Stamens 1 or 2. Styles capillary. Grain obovate oblong.

Species 2 or 3, possibly all one species. Tropical Asia, China and Japan.

P. saccharoideum, Beauv. Agrost. 56. t. 11. f. 7. var. *monandra,* Hack. Monog. Androp. 193. Stems simple from a short base tufted or elongate branched slender 6-18 inches tall leafy. Leaves $\frac{3}{4}$ to 2 inches long $\frac{1}{16}$ inch wide ciliate at the base. Spikes $\frac{1}{2}$-1 inch long very slender spikelets $\frac{1}{14}$-$\frac{1}{12}$ inch long, hairs from the base longer. Glume I hyaline oblong truncate tip ciliate, II longer keeled and shortly terminally awned, IV narrow hyaline with a very long brown scabrid awn. Stamen 1 rarely 2. *P. crinitum,* Trim. Fund. Agrost. 166. Kunth. Enum. I. 478. Hook. fil. Fl. Brit. Ind. VII 141. *P. polystachyum,* Kunth. Revis. Gram. 493 (part) t. 161. *Homoplitis crinita,* Trim. Fund. Agrost. 166.

Johor: Kuala Kahang (Kelsall H. B. S. 4104); Pahang near Pekan and Tahan River (Ridley 1327); Selangor: Ginting Bidai (Ridley); Malacca: Ayer Panas (Goodenough 1987): Penang: Penara Bukit, Waterfall (Curtis 877); Perak (Wray 3447). On banks especially along streams local but often abundant. I follow Hackel in considering this form to be a variety only of *P. saccharoideum* of Beauv.

23. Eremochloa, Buse.

Perennial grasses. Leaves mostly basal subequitant narrow linear. Spikes one on a stem. Spikelets 2 flowered second, on clabate internodes of a curved flattened rachis imbricating small; with a pedicelled or sessile abortive spikelet above, awnless. Glume I orbicular ovate or lanceolate, flat edges incurved pectinate with scabrid processes, II oblong lanceolate acuminate thinner 3 nerved, III oblong, palea similar thin, male, IV smaller oblong obtuse, palea

as long linear oblong. Stamens 3. Anthers long linear. Styles and stigmas short.

Species 9. Tropical Asia and Australia.

E. MALAYANA, n.sp. Stems 2 feet tall, glabrous, leaves narrowly linear short obtuse $\frac{1}{8}$ inch across. Spikes $1\frac{1}{2}$ to 3 inches long, internodes $\frac{1}{2}$ length of rachis, callus ciliate. Spikelets $\frac{1}{6}$ inch long. Glume I lanceolate covered with appressed hairs subacute, spikes numerous scabrid, nerves indistinct. Glume II lanceolate pubescent at the base, acuminate strongly 3 nerved, III subsimilar thinner glabrous palea as long, IV similar thin lanceolate acuminate.

Kedah: Yan (Ridley 5154). Endemic.

24. POLLINIA, Trim.

Annual or perennial grasses. Spikelets solitary, in pairs, or racemed or fascicled more or less hairy, rachis articulate fragile internodes and pedicels slender. Spikelets 1 or 2 flowered, in pairs 1 sessile and 1 pedicelled similar, callus short bearded. Glumes 4. I and II subequal rather thin, I flat or concave edges incurved 2 keeled and winged above, II as long ovate lanceolate keeled, III hyaline, IV hyaline bifid with a slender awned. Palea very short. Stamens 2 or 3. Styles short, stigmas long. Grain oblong.

Species about 30. India, China, Malaya, Australia.

Hardly distinct from *Ischaemum* and chiefly by the more slender internodes of the spikes, and the minute broad palea of Glume IV.

Stems long creeping. Spikes appressed chestnut	1. *P. Ridleyi.*
Stems creeping ascending. Spikes 3-4 slender pale	2. *P. gracilis.*
Stems tall. Spikes spreading pale or purple.	
Leaves hispid	3. *P. grata.*
Leaves glabrous	4. *P. ciliata.*
Spikes appressed erect, stout, callus glabrous ..	5. *P. rupestris.*

1. P. RIDLEYI, Hack. Oesterr. Bot. Zeitschr. XL. 1, 1891, 7. Stem creeping below, a foot or more with ascending leafy stems a foot or more long. Leaves very narrow $1\frac{1}{4}$ inch long subdistichous acuminate sheaths long narrow glabrous. Spikelets terminal 2 to 4 appressed 1-2 inches long. Spikelets appressed in pairs one sessile and one peduncled, rachis and peduncle hairy with stiff brown bristles. Glume I oblong truncate brown toothed and ciliate at the top, II cuneate obovate truncate toothed. III very small oblong hyaline, palea as long or longer, IV short lanceolate awned. Hook. fil. Fl. Brit. Ind. VII. 114.

Johor: Jambu Larang (Feilding); Pahang: Sungei Meang and Rumpin River (Ridley 7). Abundant on the sand hills.

2. P. GRACILIS, n.sp. Stems very slender creeping geniculate ascending 8-9 inches. Leaves narrow linear acute glabrous base long ciliate 3 inches long ¼ inch wide. Spikes 3-4 slender 2 inches long pale. Spikelets very narrow, hairs white shorter than the glumes. Gl. I lanceolate acute pale, II longer tip scabrid shortly awned, III absent palea oblong truncate, IV lanceolate with a fairly long awn.

Selangor 20th mile Tras Route (Ridley 8476). Endemic rare. Near *P. ciliata* but much more slender.

3. P. GRATA, Hack. Monogr. Androp. 175. Stems tall branched moderately stout several feet high, nodes glabrous. Leaves lanceolate acuminate narowed at the base hipid 4 inches long ⅜ inch wide sheaths smooth. Spikes 6 terminal 3 inches long deep purple. Spikelets ⅛ inch long hairs at base shorter than glumes violet. Glume I oblong truncate toothed ciliate, II. as long obscurely mucronate, III. long truncate toothed ciliate, IV short hyaline broad awn long orange twisted. Palea ovate. Hook. fil. Fl. Brit. Ind. VII. 115.

Penang Hill at 2500 feet alt. (Ridley 7068), (Curtis 2490). Local. Distrib. India, Java, China.

4. P. CILIATA, Trim. Mem. Acad. Petersb. Ser. VI. ii. 306. Perennial stems tall slender branched 4 or 5 feet tall, nodes glabrous. Leaves lanceolate acuminate narrowed into a short petiole at base glabrous, midrib conspicuous 4 inches long ¾ inch wide. Spikes 3-8 alternate slender 3 inches long pale. Spikelets lanceolate in pairs one sessile the other very shortly pedicelled, hairs white shorter than glumes, ⅛ inch long. Glume I. lanceolate acuminate, keels scabrid, II as long broader cuspidate or awned, III absent. IV oblong awned. Hack. Monogr. Androp. 176. Hook. fil. l.c. 116. *P. Wallichiana, lancea* and *laxa,* Nees. Steud. Syn. Gram. 410. *Andropogon biaristatus,* Steud. l.c. 379. *A. fasciculatus,* L. Sp. Pl. 1047.

Pahang River, Renchong (Ridley 1331), Tahan River (2135). Distrib. India and Ceylon. In masses on river banks, rare.

5. P. RUPESTRIS, Ridl. Journ. Roy. As. Soc. Str. Br. Vol. XLIV. p. 208. Perennial several feet tall, stout, nodes ciliate. Leaves acuminate 7-8 inches long ½ inch wide narrowed at the base glabrous above, covered with scattered hairs beneath mouth of sheath hairy, ligule short truncate. Spikes several erect appressed 4 inches long fragile, stout. Spikes callus not ciliate. Glume I ovate, lanceolate boat-shaped mucronate keel ciliate margins hyaline, II similar in shape with strong bristles on the back, cartilaginous ribbed reddish, III hyaline shorter oblong, palea narrower pubescent, IV short hyaline, with a long twisted awn from between two linear acuminate points.

Johor: Batu Pahat, at Batu Putih (Ridley 11018).

25. Ischaemum, L.

Annual or perennial grasses. Spikes solitary, in pairs, or digitate or fascicled, internodes thick trigonous ventrally hollowed. Spikelets in pairs, one sessile, one pedicelled, 1-2 flowered pedicelled spikelet often different from the sessile one. Sessile spikelet. Glumes 4. I chartaceous or stiffly coriaceous awnless ovoid oblong or lanceolate, sides incurved, more or less distinctly winged on each side, II as long, lanceolate, sometimes awned, III nearly as long, membranous acute, paleate. Stamens 3 or not. Palea narrower lanceolate 2 veined, centre stiff with broad inflexed flaps, IV deeply 2 cleft awned, base of awn twisted brown, smooth. Styles and stigma short. Pedicelled spikelet similar or not. Glume I semiovate flat broadly winged, IV oblong obtuse or very shortly bifid awnless.

Species 40. Tropical and subtropical Asia, S. Europe, Australasia, Africa, rare in South America.

§ Euischaemum. Spikes 2, or more. Glume I of sessile spikelet not strongly nerved.

Spikelets glabrous. Tall stout erect grasses nodes glabrous.

Glume I oblong hard, transversely wrinkled at base.

Spikes 3 inches long slender .. .. 1. *I. rugosum.*

Spikes 4-7 inches long stout .. .. 2. *I. magnum.*

Glume I narrowly elliptic oblong smooth 3. *I. laeve.*

Spikelets glabrous.

Slender, creeping or sarmentose grass.

Spikes ½-2 inches long .. .. .. 4. *I. muticum.*

Spikes silkily hairy.

Stem I to 6 feet tall .. .. .. 5. *I. Feildingianum.*

Slender grasses ascending nodes ciliate, glumes thin.

Keel of glume II winged above .. 6. *I. ciliare.*

Keel of glume II not winged .. 7. *I. Timorense.*

§ (Sehima). Spike solitary. Glume I strongly nerved .. .. 8. *I. Beccarii.*

1. I. rugosum, Salisb. Ic. Strip. Rar. I. t. 1. Annual, stems rather slender ciliate at the nodes geniculate, about 2 feet tall. Leaves linear acuminate with scattered hairs, 9 inches long ¼ inch wide, narrowed at the base. Spikes 2 appressed, 3 inches long stout. Spikelets green or yellow ⅛ inch long erect appressed to the rachis,

in pairs one sessile and one shortly pedicelled, with short hairs at the base. Glume I oblong hard coriaceous below transversely wrinkled, tip membranous rounded, Glume II thinner lanceolate acute boat-shaped, III thin lanceolate acuminate paleate, IV shorter bifid with a long awn ¼ inch in length twisted. Hack. Monogr. Androp. 206. Hook. fil. Fl. Brit. Ind. VII. 127. *I. Royleanum,* Miq. Fl. Ind. Bat. III. 498. *I. colladoa,* R. Br. Prodr. 1, 205. Spreng. Syst. I. 298. *I. segetum,* Trin. Mem. Acad. Petersb. Ser. 6. Vol. II. 294. *Mesoschium Griffithii,* Nees. and Arn. Ann. Mag. Nat. Hist. I. (1838) 284. *M. Arnottianum, rugosum, Wightianum,* Nees. Nov. Act. Nat. Cur. XIX. Suppl. I. 199. *Colladoa distachya,* Cao. Ic. 37. t. 460.

Singapore: Galang (Ridley 9134); Sungei Ujong (Cantley's Coll.); Malacca: Ayer Moleh (Ridley), Ayer Keroh (10757). Distrib. India, China and Malaya. Native name "Rumput Ekor Chawi." Scarce.

2. I. MAGNUM, Rendle. Journ. Bot. XXXII. (1894) p. 102. Perennial large grasses, 5 to 6 feet tall stems stout, branched nodes glabrous. Leaves 8 to 9 inches long, ½ inch wide, acuminate glabrous base broad rounded, ligule bifid ciliate. Spikes 2 (occasionally 3) thick 4 to 7 inches long appressed yellow. Spikelets in pairs one sessile, one shortly pedicelled, ¼ inch long, pedicel with a tuft of white hairs. Glume I oblong cartilaginous apex thin membranous ciliate, wrinkled across the base less distinct than in *I. rugosum* and sometimes absent. Glume II coriaceous as long keeled edges incurved, III lanceolate acuminate paleate, palea as long, IV rather shorter ovate lanceolate, awned or not, palea narrowly lanceolate. Hook. fil. Fl. Brit. Ind. VII. 128.

Singapore: Blakan Mati (Murton, Feilding, Ridley 3781), Serangoon Road (Ridley 1098), Balestier Plain (6250); Johor: Tebing Tinggi (Ridley 11012). Distrib. Islands south of Singapore, Labuan.

Abundant in wet spots, near rivers, and on the sea coast, forming considerably masses. Though Rendle describes the plant as awnless, the specimens even from Blakan Mati, the type-locality are awned. The wrinkling of Glume I is very variable sometimes well marked transverse wrinkles or mere nodules or again indistinguishable.

3. I. LAEVE, Ridl. Journ. Roy. As. Soc. Str. Br. Vol. XLIV. p. 207. Stem tall resembling that of *I. magnum,* stout, nodes glabrous. Leaves lanceolate acuminate from a broad base 3 inches ¼ inch wide, edge scabrid, at apex, glabrous ligule short bilobed, mouth of sheath ciliate. Spikes 2 appressed 4 inches long. Spikelets in pairs one sessile one shortly pedicelled ¼ inch long joints and angles of pedicel

shortly white ciliate. Glume I narrowly elliptic oblong, submucronate smooth, edge ciliate, II lanceolate shorter edge ciliate, III thin lanceolate ciliate, paleate, IV shorter lanceolate, with a short straight pale awn.

Singapore: Galang (Ridley 9143). Endemic.

4. I. MUTICUM, Linn. Sp. Pl. 1049. A long creeping or suberect scandent grass often many feet long, branched and fairly stout glabrous. Leaves lanceolate acuminate or acute with a broad base 1½-4 inches long ¼-½ inch wide, sheaths ciliate on the edge. Spikes 2 erect thick appressed so as to appear one, ½ to 2 inches long glabrous. Spikelets in pairs closely appressed to the rachis, one nearly sessile and one pedicelled nearly ¼ inch long lanceolate glabrous. Glume I lanceolate stiffly cartilaginous acute white with raised green veins, edge with a thin hyaline serrulate wing, tip 2 toothed, II cartilaginous lanceolate acute tip keeled minutely serrulate, III ovate lanceolate thin reddish, IV nearly as long as II thin convolute with a short awn. Stigmas white. Hack. Monog. Androp. 212. Hook. fil. Fl. Brit. Ind. VII. *I. repens,* Roxb. Fl. Ind. 1, 323. *I. glabratum,* Presl. Rel. Haenk. 1, 328. *Andropogon, muticus, repens, polymorphus* and *relictus,* Steud. Syn. Gram. 374, 375, 377. Very common over the whole peninsula.

Singapore (Kurz), (Wallich 8865 E), Tanglin, etc. (Ridley); Johor: Tanah Merah (Ridley); Pahang: Pekan; Malacca: Ayer Panas (Derry 20), (Griffith); Perak: Changkat Jerim (Wray 1887); Dindings; Selangor; Penang. Distrib. India, Malaya, Australia. Native name "Rumput Tembaga Jantan," "Rumput Terutus Tembaga." Leaves used in case of headache by Malays. A very common and conspicuous grass from its white spikes. Hackel gives two subvarieties, *repens* the seashore and dry bank creeping form, and *erectum* the tall form met with in bushes, and mangrove swamps.

5. I. FEILDINGIANUM, Rendle. Journ. Bot. XXII. (1894), 101. Stems creeping, ascending 1 to 6 feet, branched or simple, rather stout. Leaves lanceolate with a broad base cordate 3 inches long ¼-½ inch wide, glabrous above or pubescent on both sides, ligule short truncate, sheath glabrous or hairy. Spikes 2, appressed silkily hairy, 2-3 inches long, rachis and pedicels silky hairy. Spikelets in pairs one sessile, one pedicel pale ⅛ inch long. Glume I oblong, sides involute tip rounded ciliate cartilaginous. Glume II lanceolate acuminate thinly cartilaginous. Glume III shorter thin lanceolate, palea as long. Glume IV shorter bifid, with a long twisted awn dark at at base. Hook. fil. l.c. p. 132.

Johor: Sungei Tebrau, Castlewood (Ridley 9170), Kota Tinggi, Panchur, Johor River (Ridley 10945); Malacca: Gunong Ledang (Mount Ophir) covering the Padang Batu (Feilding, Ridley 4114,

3134, 3135); Kedah: Gunong Jerai (Ridley 5152). On rocky spots at an altitude of 2000-3000 and on river banks in the low country. Endemic.

6. I. CILIARE, Retz. Obs. 6. p. 36. A slender creeping grass, with the upper part of the erect stems 12- inches tall nude, nodes white ciliate, lower part of stem usually red. Leaves flaccid lanceolate acuminate softly hairy edges scabrid 1-1½ inch long ⅛ inch wide, ligule short ciliate, sheath ciliate. Spikes 2 or rarely 3, appressed eventually spreading 1-2 inches long green or purple, hairy rachis angled and angles and base of pedicels armed with short white bristles. Spikelets in pairs one almost sessile, the other shortly pedicelled. Glume I papery oblong toothed with two longer median processes green, tip winged green or violet, II longer lanceolate aristate keel serrate, III as long as I. lanceolate acuminate thin, palea flat nearly as long, IV thin bifid with long points, awn long brown. Stamens marbled purple, eventually yellow. Stigmas violet. Hack. Androp. 225. Hook. fil. Fl. Brit. Ind. VII. 133. *I. aristatum,* Willd. Spec. 4. p. 939. (non L). *Andropogon Retzii* and *incertus,* Steud. Syn. Gram. I. 375. *Spodiopogon obliquivalvis,* Nees. Pl. Meyen. p. 185.

Singapore: Tanglin (Ridley 83, 467), Kranji (4102); Malacca (Griffith), Sungei Udang (Goodenough 1682), Tanjong Kling; Penang Waterfall (Curtis 1806). Distrib. India, Malaya, China. A very common grass. Native name "Rumput Gerek Telinga." The common form is the variety *malacophyllum* of Hackel. It is very liable to the attacks of an *Ustilago.*

7. I. TIMORENSE, Kunth. Rev. Gram. 1. p. 369. t. 98. Stems decumbent ascending 1 to 2½ feet nodes ciliate. Leaves narrow linear acuminate 4 to 9 inches long ¼-½ inch wide glabrous except the ciliate base and sheath. Spikes 2 appressed, 2½-4 inches long, rachis hairy especially at the joints, green. Spikelets ¼ inch long, green. Glume I ovate or lanceolate acuminate cartilaginous, nerves distinct, back hairy, II about as long shortly awned or acuminate, III lanceolate thin, palea linear oblong, IV shortly bifid with a rather short awn from the cleft. Hack. Monog. Androp. 229. Hook. fil. Fl. Brit. Ind. VII. 136. *I. tenellum,* Roxb. Fl. Ind. I. 323. *Spodiopogon Blumii,* Nees. Steud. Syn. Glum. 373. *Andropogon asthenos* and *timorensis,* Steud. l.c. 376.

Singapore: Tanglin (Ridley 1633), Chan Chu Kang (5780), Kranji (448); Malacca: Bukit Bruang (Derry); Dindings: Lumut; Penang: Waterfall (Curtis 2167). Distrib. India, Malaya and Polynesia.

§ SEHIMA.

8. I. BECCARII, Hack. Monogr. 217. Perennial grass 2-3 feet tall moderately slender. Stems leafy nodes glabrous. Leaves long

linear acuminate with long points 12 inches long ¼ inch wide, striate, beneath glaucous sparsely hairy or glabrous. Spikes solitary narrow 2 inches long, green erect, internodes and pedicels ½ as long as the spikelets compressed sides ciliate. Sessile spikelets ⅓ inch long, callus short bearded. Glume I thin green lanceolate, tip 2 toothed, teeth ciliate, edges inflexed, nerves 5 green. Glume II lanceolate concave awnless glabrous as long as Gl. I. Gl. III lanceolate acuminate hyaline paleate, IV oblong apex bifid with a slender awn 1 inch long, glabrous.

Selangor: Top of the rocks at the Kuala Lumpur Caves (Ridley 8129). Rare. This also appeared in the Economic Gardens as a weed. Distrib. Borneo.

26. Rottboellia, Linn. f.

Perennial grasses, with tall leafy stems. Leaves narrow. Spikes solitary, or racemose rachis jointed and fragile, or not, joints terete or compressed. Spikelets in pairs dissimilar usually awnless. Sessile spikelet sunk in a groove in the joint 1-2 flowered bisexual. Glumes 4. I ovate oblong coriaceous flat or convex, margins narrowly incurved. II thinner acute. III hyaline, brown. IV hyaline bisexual. Stamens 3. Styles distinct, stigmas short. Pedicelled spikelet smaller. Glume I less coriaceous, and spikelet often abortive.

Species 30. Tropics of both hemispheres.

Spikes fragile panicled awnless.

Glume I armed with tubercles along the edge .. .. 1. *R. glandulosa.*

Glume I smooth unarmed .. .. 2. *R. striata.*

Spikelets not fragile solitary.

Glumes I and II awned .. .. 3. *R. protensa.*

1. R. glandulosa, Trim. Mem. Acad. Petersb. Ser. 6, 11 (1833), 250. A large stout grass 3 to 6 feet tall. Stems branched, nodes bearded. Leaves broadly linear acuminate ¾-1 inch wide glabrous edges scabrid, mouth bearded or glabrous. Spikes 3-4 inches long slender fragile on long slender sheathed peduncles, 6 inches or more long, joints nearly as long as the spikelets narrowed at the base ribbed pubescent. Spikelets ¼ inch long yellowish. Sessile spikelet. Glume I ovate lanceolate winged on each side at the top pubescent edges incurved with short tubercles on each side at the base. Glume II boat-shaped acute keeled smooth. Glume III ovate hyaline. Glume IV thin hyaline. Pedicelled spikelet reduced to a single lanceolate glume, strongly ribbed. Hack. Monogr. Androp. 302. Miq. Fl. Ind. Bat. III. 408. Hook. fil. Fl. Brit. Ind. VII. 157. *Coelorachis muricata,* Brngn. Voy. Bot. I. 65. t. 14. *Ophiurus muricatulus,* Steud. Zo. 77. Verz. 57. Syn. Gram. 360.

Singapore (Wallich 8887 B), Bajau, Changi (Ridley); Johor: Tanjong Surat (Kelsall), Kota Tinggi (Ridley); Pahang: Pekan, Tahan River (Ridley 2828), Sungei Chenei (5025); Selangor: Bukit Kudah (Ridley 80, 86); Malacca (Griffith); Perak (King's Coll.), Taiping (Ridley), Bujong Malacca (Curtis 3336); Penang: Balik Pulau (Ridley 9411), (Curtis 1913); Province Wellesley: Permatang Bertam (Ridley 6988). Distrib. Malay Islands and Burmah. Not rare by river banks.

2. R. STRIATA, Nees. Steud. Syn. Gram. 361. Stem 3 to 4 feet tall slender smooth branched above. Leaves 2 to 4 feet long ¼ to 2 inches wide linear lanceolate narrowed at the base setaceously acuminate sheaths glabrous, ligule very short membranous. Spikes fascicled often on very long peduncles 1-2 inches long pale terete glabrous. Callus annular glabrous. Sessile spikelets as long as the joint. Glume I oblong lanceolate shortly winged below the tip smooth with 4-6 grooves below the middle, II ovate chartaceous subacute keeled, III ovate acute hyaline, IV ovate. Hack. Monogr. Androp. p. 301. Hook. fil. Fl. Brit. Ind. l.c. 157.

Singapore (Wallich 8877). Distrib. Northern India to Tavoy. As this plant has not been re-discovered in Singapore or anywhere else in the Malay Peninsula it is possible that the locality given by Wallich is wrong.

3. R. PROTENSA, Hack. Monogr. Androp. 289. Stem leafy stout spongy 18 inches inches tall. Sheaths swollen short ligule short with whitish bristles, lamina of leaf linear acuminate glabrous 3 to 8 inches long ¼ inch wide. Spikes numerous, solitary in the leaf axils rather thick and hardly fragile 4 inches long. Spikelets ¼ inch long. Callus indistinct glabrous. Glume I of sessile spikelet lanceolate acuminate subacute with a long scabrid point. Glume II similar in pedicelled spikelet with a long pale awn-like point. Glume III much shorter hyaline. Palea hyaline shorter lanceolate. Stamens 3 anthers oblong red very small. Hook. fil. Fl. Brit. Ind. l.c. p. 153. *Hackmathria protensa,* Steud. Syn. Gram. 359.

Kelantan on an Island in the river Kamposa (Ridley), rare. Distrib. India, Java.

27. MANISURIS, Sw.

Annual much branched grasses. Leaves broad cordate at the base. Spikes numerous, axillary and terminal solitary, peduncled, rachis fragile. Spikelets very small, in pairs, one sessile globose bisexual with 4 glumes. Glume I hard pitted globose with a large opening towards the rachis. Gl. II ovate papery filling the opening in Gl. I. Gl. III smaller ovate. Gl. IV hyaline. Pedicelled

spikelet flat, ovate on a short rounded pedicel. Glume I ovate subacute flat ribbed.

Species 2. One most tropical countries, one Indian.

M. GRANULARIS, Linn. fil. Nov. Gram. Gen. 37. f. 7. fig. 1-7. Plant 12-13 inches tall. Stems leafy. Leaves linear lanceolate hairy, 3-4 inches long ¼ inch wide, numerous crowded or rather distant lower sheaths larger ampliate, ligule a raised ciliate edge. Spikes half an inch long to one inch. Spikelets $\frac{1}{16}$ inch long. Beauv. Agrost. 119. t. 21. f. 10. Hack. Monogr. Androp. 314. Hook. f. l.c. 159. *M. polystachya,* Beauv. Fl. d'Oware and Benin. 1, 24. t. 14.

Pahang: Pulau Tawar, Pahang River (Ridley 2134) rare. Distrib. Tropics generally.

28. MNESITHEA, Kunth.

Perennial grasses, with narrow leaves, and solitary spikes on long peduncles, rachis fragile joints terete or thickened upwards. Spikelets in pairs sessile sunk in cavities, between them a narrow linear pedicel with the rudiments of a third spikelet. Sessile spikelets 1 flowered with 4 glumes, unawned. Glume I oblong or lanceolate coriaceous, margins incurved, II thinner, III ovate hyaline empty, or paleate, IV similar or smaller bisexual. Stamens 3. Grain oblong narrow.

Species 3. Tropical Asia.

Leaves and peduncles glabrous. Glume I not pitted	1. *M. geminata.*
Leaves and peduncles pubescent. Glume I pitted ciliate	2. *M. pubescens.*

1. M. GEMINATA. Stems rather slender 3 feet tall nodes bearded. Leaves chiefly tufted at the base linear acuminate 10-12 inches long ¼ inch wide, glabrous except at the mouth of the sheath, flaccid. Spikes solitary slender fragile 2 inches long on long slender peduncles, joints short thick dilated upwards channelled on one side. Spikelets in pairs sessile parallel separated by a narrow linear pedicel with the rudiments of another spikelet on the top. Glume I lanceolate subulate acuminate as long as the joint pubescent at the base hard ¼ inch long. Glume II thinner lanceolate cuspidate, III shorter ovate acuminate hyaline empty, IV and palea similar. *Rottboelia geminata,* Hack. Oester. Bot. Zeitsch. 1891. p. 48. Hook. fil. Fl. Brit. Ind. VII. 159.

Pahang: Pekan and Rumpin River (Ridley). Endemic rare.

2. M. PUBESCENS, Ridl. Roy. As. Soc. Str. Br. Vol. XLIV. p. 207. Stems slender 3 feet tall, nodes ciliate, leafy. Leaves linear acuminate 6-12 inches long ¼-½ inch wide, softly pubescent. Spikes

slender on long slender pubescent peduncles 4 inches long solitary 1½ inch long yellow breaking below the node so that each joint is shortly stalked, internodes short ⅛ inch long dilated upwards bearded at base. Spikelets 2 sessile with a narrow linear pedicel between longer than the internode. Glume I ovate lanceolate acute tip curved base channelled with 4 or 5 grooves above with numerous linear perforations from each of which rises a cilium, hard. Gl. II lanceolate acute as long. III lanceolate hyaline smaller. IV smaller hyaline.

Johor: Batu Pahat at Minyak Buku (Ridley 11017). Endemic.

29. Polytrias, Hack.

A small creeping ascending grass with lanceolate linear leaves with a broad base. Stem slender geniculate bearing one terminal golden brown spike. Spikelets 1 flowered. Glumes I and II lanceolate membranous. Glume III absent. Glume IV very short with a long awn, paleate.

Species 1. Malay Peninsula and Java.

P. praemorsa, Hack. Engl. P. Flanz. Fam. Vol. II. 21, 24. Monogr. Androp. 189. About a foot or more tall, nodes glabrous. Leaves 1 inch long ⅛ inch wide ciliate, ligule very short ciliate hyaline. Spike 2½ inch long. Spikelets sessile, and pedicelled, ⅛ inch. Glume I yellow with long hairs, lanceolate obtuse truncate. Gl. II narrower. Gl. IV very short, truncate with an awn ¼ inch long. *Andropogon firmandus,* Steud. Syn. 370. *A. diversiflorus,* Zoll. Syst. Verz. 58. Syn. l.c. *A. amaurus,* Buse. Pl. Jungh. 3. 360. Walp. Ann. 6. p. 1065. *Pollinia praemorsa,* Nees. Steud. Syn. 409.

Singapore: Changi, Botanic Gardens (Ridley 5773a-458); Malacca Town (5773); Penang. Distrib. Java. Abundant in grass plots, perhaps introduced from Java.

30. Apluda, L.

A tall slender perennial leafy grass. Stems geniculate base creeping or decumbent above branched. Leaves narrow petioled upper ones spathe-like mucronate. Spikes numerous very small solitary simple on the ends of the branches, each enclosed in a membranous peduncled spathe, of one joint. Spikelets 3, one sessile 2 flowered bisexual, one pedicelled imperfect and one terminal male. Sessile spikelet on the bulbous base of the rachis. Glumes 4. I chartaceous lanceolate ribbed. II flattened ribbed, gibbous keeled. III ovate lanceolate hyaline paleate, male. IV much smaller, bisexual ovate awned or not. Stamens 3. Anthers short. Stigmas plumed free.

Species 1, very variable. India, China, Malaya to Hawaii.

A. varia, Hack. Monogr. Androp. 196. var. *intermedia,* Hack. l.c. Stems slender 1 to 7 feet tall. Leaves linear 6 to 9 inches long ⅛

inch wide, or less glabrous. Spikes distant ¼ inch long, spathes mucronate, pale green. Glume IV awned.

Pahang: Ketapang and Mahang, Pahang River (Ridley 1224 and 1307). In masses on the river bank. Distrib. of variety Philippines.

The common Asiatic grass seems to be quite rare in the peninsula. This form, named by Hackel, is intermediate between the varieties *mutica* and *aristata*. It is a very weak flaccid plant, with few and scattered heads.

31. Andropogon, L.

Annual or perennial grasses. Leaves usually long and narrow. Spikes solitary or in pairs or panicled or fascicled, with fragile articulate rachis. Spikelets in pairs, one sessile bisexual one pedicelled male or barren. Sessile spikelet one flowered. Glumes 3 or 4. Gl. I thinly coriaceous or papery, awnless, II thinner awnless (or rarely with a short awn), III hyaline, or absent, IV hyaline, very short or reduced to the base of the long awn, palea very small or absent. Stamens 3 to 1.

Species 200. Whole world, very few in Malay Peninsula.

Sessile spikelets all similar.

Annual with very slender branched stems 1. *A. brevifolius.*
Perennials spikes solitary on long peduncles of many spikelets .. .. .. 2. *A. hirtiflorus.*
Spikes racemed or peduncled .. .. 3. *A. intermedius.*
Spikes of 3 spikelets panicled, callus very shortly bearded .. .. .. 4. *A. aciculatus.*
Callus long bearded .. .. .. 5. *A. Wightianus.*

§ 2. Heterozygi.

Lower sessile spikelets dissimilar from the upper ones and mostly sterile .. .. 6. *A. contortus.*

1. A. brevifolius, Sw. Prod. Ind. Occ. 26. Fl. Ind. Occ. I. 209. Annual erect or creeping 6-24 inches tall slender leafy, branched geniculate flaccid. Leaves linear oblong obtuse ½-¾ inch long ⅛ inch wide glabrous sheaths somewhat dilated. Spikes very slender solitary on a slender peduncle from a spathe-like leaf, 1 inch or more long glabrous, joints and pedicels clavate mouths cupular toothed, sessile spikelet as long ⅓ long linear oblong. Glume I lanceolate apex bifid or entire, II similar but thinner. Pedicelled spikelet represented by a linear spathulate glume with a long awn. Kunth. Rev. Gram. II. 563. t. 196. Enum. Pl. I. 488. Hack. Monogr. Androp. 363. Hook. fil. l.c. 165. *A. debilis,* Kunth. l.c. *A. fragilis,* Br. Prodr. 202.

A. obtusifolius, Poir. Encycl. Suppl. I. 583. *A. parviflorus,* Roxb. Fl. Ind. I. 274. *A. tenellus,* Presl. Rel. Haenk. I. 335. *Schizachyrium brevifolium,* Nees. Agrost. Braz. 332.

Pahang: Pulau Tawar open grassy fields (Ridley 2132); Penang Hill and Batu Feringhi Road, in dry rocky spots (Ridley 7091, 8362). Rare. Distrib. Africa, India, Malaya, China, Japan, Australia and South America.

2. A. HIRTIFLORUS, Kunth. Rev. Gram. II. 596. A large glaucous tufted grass. Stems 3 feet tall stiff, leafy. Leaves tufted at the base and scattered on the stem linear acuminate glabrous, ribbed 3-6 inches long ribbed $\frac{1}{8}$ inch wide. Spikes solitary on long peduncles slender 3 inches long, joints ciliate excavate at the top base and mouth ciliate. Spikelets half an inch long. Glume I lanceolate rigid scabrous, tip bifid purplish, II keeled. Keel ciliate margin hyaline. III very thin hyaline. IV very small oblong truncate with a long yellowish brown awn. Pedicelled spikelet short lanceolate acuminate or mucronate on a stout peduncle ciliate on the edges. *A. pseudograyia,* Steud. Syn. Gram. I. p. 365. Hack. Monogr. Androp. 370. *Rottboellia sanguinea,* Retz. Obs. 3. p. 25. *Thelepogon sanguineus,* Spreng. Syst. 1, 299.

Singapore: Changi (Ridley 1756), Gelang (8950), Blakan Mati (5778). In sandy spots, forming large tussocks. Distrib. China, Ceylon, Madagascar.

3. A. INTERMEDIUS, Br. Prodr. 20. Perennial 3 to 5 feet tall. Stems moderately stout nodes glabrous. Leaves linear acuminate tufted at the base with broad flattened sheaths, glabrous 12 inches long $\frac{1}{8}$ inch wide. Panicle rather narrow 4 or 5 inches long grey branches ascending, whorled glabrous slender. Pedicels long ciliate with white hairs slender. Sessile spikelets $\frac{1}{8}$-$\frac{1}{6}$ inch long. Glume I lanceolate truncate glabrous or hairy at the tip. II thinner, subacute. III hyaline lanceolate shorter. IV reduced to a pale awn nearly $\frac{1}{2}$ inch long. Pedicelled spikelets linear lanceolate. Glume I glabrous with ciliolate keels. II lanceolate ciliate. III shorter oblong. IV absent. Kunth. Enum. Pl. I. 500. Hack. Monogr. 485. Hook. fil. l.c. 175. *A. fascicularis,* Thw. Enum. Pl. 437.

Pahang: Pekan (Ridley 14); Selangor: Kuala Selangor (Ridley 7771).

4. A. ACICULATUS, Retz. Obs. V. 22. Perennial stems creeping and branching at the base. Leaves mostly basal, linear obtuse glabrous, 3 inches long $\frac{1}{8}$ inch wide. Ascending portion of stem 9 inches tall slender panicle narrow 2-3 inches long branches whorled slender scabrid. Ascending spikes purple narrow lanceolate $\frac{1}{4}$ inch long. Spikelets 3, 2 pedicellate and one sessile. Sessile spikelet narrow

base ciliate. Glume I lanceolate acute purple pubescent and spiny on the keel. II thinner white with a green spinny keel. III linear oblong hyaline. IV lanceolate linear acuminate with a long scabrid awn $\frac{1}{6}$-$\frac{1}{3}$ inch long. Stamens. Anthers oblong speckled. Stigmas plumose yellow. Pedicelled spikelets longer and narrow purple glabrous. Glumes I and II lanceolate subacute edges ciliate. III and IV shorter hyaline. Stamens 3 yellow. Roxb. Fl. Ind. I. 262. Hack. Monogr. 562. Hook. fil. l.c. 188. *A. aciculatis,* Willd. sp. Pl. IV. 906. *A. javanicus,* Steud. Syn. Glum. 396. *A. subulatus,* Presl. Rel. Haenk. I., 341. *Chrysopogon aciculatus,* Trin. Fund. Agrost. 188. *C. subulatus,* Trin. Steud. Nomence. II. ii. 360. *Rhaphis acicularis,* Desv. Opux. 69. *R. javanica,* Nees. Steud. Syn. 396. *R. trivaltvis,* Lour. Fl. Cochich. 553. *Centrophorum Chinense,* Trin. Fund. Agrost. 106. t. 5. Common all over the peninsula.

Singapore: Changi, Tanglin; Johor: Sungei Tebrau; Pahang: Pekan (Ridley), Raub (Machado); Penang Waterfall (Curtis 1799). Distrib. Tropical Asia and Australia. Dry turfy spots, roadsides, grass plots, etc.

5. A. Wightianus, Steud. Syn. Glum. 395. Stem stout woody creeping. Cuchus slender 18 inches tall. Leaves stiff linear subacute glabrous 3 inches long $\frac{1}{6}$ inch wide glabrous except the ciliate mouth of the sheath. Panicle narrow 4 inches long, branches filiform ascending. Callus and pedicels red-bearded along the edges. Sessile spikelets nearly $\frac{1}{4}$ inch long excluding the awns brown. Glume I lanceolate acuminate tip bifid stiffly hairy at the tip. Glume II lanceolate cartilaginous awned. III linear oblong, IV oblong short with an awn 2 inches long dark at the base paler above bristly. Pedicelled spikelets longer pale. Glume I pubescent long awned, II lanceolate awned, III oblong ciliate, IV very narrow awn-like ciliate. Hook. fil. Fl. Brit. Ind. VII. 191. *A. aristulatus,* Hochst. Steud. Syn. Glum. 397. Hack. Monogr. 556. *A. breviaristatus,* Steud. l.c. 396. *Chrysopogon Wightianus,* Nees. Steud. l.c.

Pahang: Pekan, Kuala Pahang (Ridley). Rare in sandy spots. Distrib. India, Annam and Siam.

6. A. contortus, Linn. Sp. Pl. 1045. Stems tufted erect or decumbent, 1 to 5 feet tall, leafy chiefly at the base glabrous or scaberulous below the spikes. Leaves linear 3 to 5 inches long obtuse glabrous except for the ciliated mouth of the sheath. Spikes solitary 1 to 3 inches long. Spikelets closely imbricating, lower 2 to 6 sessile, male or neuter $\frac{1}{3}$ inch long. Glume I oblong lanceolate hairy, II lanceolate acuminate edges ciliate, III oblanceolate. Upper sessile spikelets female $\frac{1}{4}$ inch long, cylindric brown the callus red bearded. Glume I linear oblong coriaceous truncate edges incurved hispid, II linear obtuse concave coriaceous dark brown, III short oblong truncate

thin, IV an awn 3 inches long, base white, swollen a little above and brown hispid. Pedicelled spikelets pale, much longer than the sessile one. Pedicel rather short glabrous. Glume I lanceolate covered with long hairs with bulbous bases edges winged, II oblong lanceolate narrower acuminate, III oblong tip rounded, IV obovate oblong ciliate. Kunth. Enum. Pl. I. 486. Hack. Monogr. 585. Hook. fil. Fl. Brit. Ind. VII. 199. Trim. Fl. Ceyl. V. 239. *Heteropogon contortus,* Beauv. Roem. and Schult. Syst. II. 836.

Pahang: Pekan (Ridley 1590); Malacca: Pulau Besar (Ridley 60): Penang: Waterfall Gardens and Road to Batu Feringhi (Curtis 1906, 1912). Distrib. All warm countries. Not common here, it inhabits sandy open places.

A. citratus, the Lemon grass, "Sereh Makan" and *A. nardus,* L. the citronela grass "Sereh Wangi" are often cultivated. There are also plantations of it cultivated for its oil in many parts of the peninsula. *A. squarrosus,* L. The cuscus grass, or Vetiver and *A. citratus,* rarely cultivated.

32. Anthistiria, L.

Tall or short perennial or annual grasses. Leaves long and narrow. Spikes many crowded in fascicles, enclosed in spathes. Spikelets 6-11, the lowest ones awnless male or barren forming an involucre, surrounding one or more sessile bisexual or female spikelets usually awned, linear oblong. Glume I lanceolate acuminate coriaceous. II shorter or as long keeled. III oblong hyaline. IV short with a long awn. Palea absent. Stamens 3. Styles free. Stigmas long grain oblong.

Species 10. Tropics of the Old World.

Annual.

Spikes in fan-shaped nodding heads .. .. 1. *A. arguens.*

Perennial 10 or more feet long.

Panicle very large .. .. 2. *A. gigantea.*

1. A. arguens, Willd. Sp. Pl. IV. 901. Annual 6 inches to 3 feet, slender or stout. Leaves 6 to 16 inches long $\frac{1}{8}$-$\frac{1}{4}$ inch wide glabrous scabrid. Spikes in fan-shaped nodding heads, outer spathes narrow acuminate 3 to 5 inches long bluish green or dark red hairy. Inner spathes much shorter, $\frac{1}{2}$ to 1 inch long. Spikelets involucral 2-4 about an inch long green. Glume narrow lanceolate acuminate hairy, II shorter. IV short oblong bilobed ciliate with slender pale awn bisexual spikelets solitary cylindric with a brown bearded callus. Glume I convolute truncate pale brown, II similar, IV a straight brown awn scabrid 3 inches long stout. Kunth. Enum. Pl. I. 482. Hook. fil. Fl. Brit. Ind. II. 211. *A. frondosa,* Br. Prodr. 200. *A.*

pilifera, Steud. Syn. Pl. Gram. 400. *A. Junghuhniana,* Nees. in Anders. Nov. Act. Upsal. Ser. III. ii. 233. *Aristaria barbata,* Jungh. Tijdschr. Nat. Gesch. VII. 296. *Themeda arguens,* Hack. Monogr. 657. *Stipa arguens,* L. Sp. Pl. Ed. II. 117.

Singapore: Sepoy Lines (Ridley); Malacca (Griffith); Machap (Derry); Nyalas (Goodenough); Muar (Feilding H. B. S. 4103); Negri Sembilan: Seremban (Ridley 1002); Penang: Government Hill, Telok Bahang (Curtis 1911). Distrib. Andamans, Malay Islands, Australia.

Abundant in dry open grass spots, completely covering the ground for considerable areas in some parts of Penang. Native names "Mesai Adam," "Rumput Sarang Pipit," "Rumput Jangut Adam."

2. A. GIGANTEA, Cav. Ic. t. 36. A very large grass forming big tussocks. Stems stout 8 to 16 feet tall terete solid glabrous nearly an inch through at the base. Leaves 4 to 8 feet long ½ to 1 inch wide, edges scabrid serrulate. Panicle compound or decompound 3 to 4 feet long nodding, spikes on slender filiform peduncles, enclosed in a red spathe narrow acuminate longer than the peduncle. Spikelets involucral about 6 subwhorled round one, 2 or 3 bisexual spikelets, green glabrous cylindric over ½ an inch long male. Glume I lanceolate setaceously acuminate thinly coriaceous scabrid green, II shorter acuminate, III and IV shorter hyaline narrow ciliate. Bisexual spikelets cylindric lanceolate ⅜ inch long dark brown densely hairy. Callus covered with golden brown hairs. Glume I very hard lanceolate acute dark brown covered with brown hairs, II acute or obtuse, III oblong lanceolate thin, IV as long linear lanceolate thin with a stout straight scabrid awn an inch or more long. *Themeda gigantea,* Hack. Monogr. 672. *A. vulpina,* Anders. Nov. Act. Upsal. III. ii. 245. *Andropogon gigantea,* Brngn. Voy. Coq. Bot. 78. *Calamincu gigantea,* R. & S. Syst. II. 810 (not of Beauv.). *Perobachne secunda,* Presl. Rel. Haenk. I. 348. t. 48. var. *villosa,* Hack. l.c. Branches and branchlets glabrous or scabrid. Involucral spikelets glabrous, scabrid. *A. villosa,* Poir. Encycl. Suppl. I. 396. Lam. Ill. t. 841. f. 3. *A. mutica,* Steud. Syn. Gram. *Androscepia gigantea* and *mutica,* Anderss. l.c. 248. *A. gigantea* and *sundaica,* Buse Pl. Jungh. I. 364. *Aristaria mutica,* Hassk. Tijdschr. Nat. Genes. X. 117.

Singapore: Balestier Plain (Ridley); Malacca: Pulau Besar (Ridley 446); Panchor (Goodenough 1256); Penang: Mahang and Pulau Tawar (Ridley 13324 and 2822); Selangor Caves: Kuala Lumpur (Ridley 53); Province Wellesley: Bukit Mertajam (Curtis 1971); Kedah: Yan (Ridley), Tomoh (Machado).

var. *arundinacea,* Hack. Branches and branchlets glabrous. Involucral spikelets hairy on the backs with golden or red hairs, bisexual spikelets solitary rarely 2, about ½ an inch long, awn 1½ to 4 inches. *A. arundinacea,* Roxb. Fl. Ind. I. 251.

Pahang: Pekan (Haviland). Rare. Distribution of species. India, China, Malaya and Australia. This fine grass is common in open spots, banks of rivers, etc. It is called "Timpayong" in Pahang.

POACEAE.

33. SPHAEROCARYUM, Nees.

A dwarf creeper and ascending plant. Stems slender leafy. Leaves ovate cordate amplexicaul. Spikelets in a pyramidal panicle, minute rachilla jointed at the base not prolonged beyond glume III. Glumes 3, boat-shaped, I and II glabrous, II longest, III hirsute. Palea as long oblong blunt. Stamens 3. Anthers linear, grain ovoid.

Species 1.

S. ELEGANS, Nees. Steud. Nom. (Ed. II.) ii. 260. Stems 3-6 inches long glabrous. Leaves $\frac{1}{4}$-$\frac{1}{2}$ inch long glabrous (ribbed when dry) or with a few hairs along the edge and mouth of sheath. Panicle $\frac{3}{4}$ to 1 inch long, branches numerous capillary. Spikelets pale, oblong. Hook. fil. Fl. Brit. Ind. VII. 246. *Graya elegans,* Nees. Steud. Syn. Gram. 119. *Isachne pulchella,* Roth. Nov. Sp. 58. Kunth. Enum. V. 136. *Panicum elegans,* Wight. Arn. Steud. Nom. (Ed. II.) ii. 256. *P. malaccense,* Trim. Gram. Pan. 204. *P pulchellum,* Spreng. Syst. I. 322.

Singapore: Ang Mo Kio (Ridley 162, 110), Kranji (459); Johor: Kota Tinggi (Ridley); Malacca: Bukit Bruang (Derry 3537), Ayer Panas, Bukit Serdom (Derry 1067); Dindings: Lumut (Ridley Distrib. India and China. Abundant in wet muddy grassy spots.

34. SPOROBOLUS, Br.

Perennial rarely annual grasses, with narrow leaves. Spikelets very small, or minute one rarely two flowered, in spreading or compact panicles. Glumes 3, I and II unequal, III longer or shorter than I or II, one nerved palea nearly as long, 2 nerved. Lodicules minute or 0. Stamens 2-3. Anthers short. Grain loose within the glumes and palea pericarp or its epidermis loose deciduous.

Species about 80, chiefly tropical.

Glumes I and II much shorter than Gl. III.

Stem slender wiry, panicle narrowly pyramidal 1. *S. diander.*

Stem stout, panicle banches closely appressed, spikelets larger .. .. 2. *S. indicus.*

Glume II longer than III.

Dwarf annual .. .. 3. *S. piliferus.*

1. S. DIANDER, Beauv. Agrost. 25. Leaves tufted at the base often forming tussocks and scattered on the culms very narrow, 6

inches or more long, culms very slender and tuft one to two feet tall panicle 8-12 inches long narrowly pyramidal or dense, branches capillary solitary scattered or fascicled an inch long or less. Spikelets lanceolate green $\frac{1}{20}$ inch long, sessile or shortly pedicelled. Glumes I and II nearly equal very small oblong truncate erose, III much longer lanceolate, acuminate. Palea as long. Stamens 3. Grain oblong flattened truncate bright brown. Jacq. Eclog. Gram. t. 28. Kunth. Enum. I. 213. Griff. Notul. III. 46. Ic. Pl. As. t. 139. f. 85. Hook. fil. Fl. Brit. Ind. VII. 247. *Vilfa erosa,* Trim. Mem. Acad. Petersb. Ser. VI. Sc. Nat. V. ii. 86. *V. Retzii,* Steud. Syn. Gram. 162. *Agrostis diandra,* Retz. Obs. V. 19. Roxb. Fl. Ind. I. 317.

Singapore: Kalang (Ridley 10399); Johor: Tana Runto (Ridley 1708); Malacca: Ayer Panas (Cantley's Coll.); Malacca Hill (Ridley 5761); Dindings: Lumut (Ridley 7259); Penang: Sepoy Lines (Curtis 1826); Gardens (Ridley 11397). Distrib. Tropical Asia and Australia. Very common on road sides and dry spots. Native name "Rumput Tuloh Belalang."

2. S. INDICUS, Br. Prodr. 170. Tufted stems 2 to 3 feet tall often stout and hard. Leaves narrow, usually long 8-24 inches, rarely $\frac{1}{3}$ inch across. Panicle 18- inches long close or spreading pale, branches slender covered to the base with spikelets crowded $\frac{1}{18}$ to $\frac{1}{12}$ inch long. Glumes I and II obtuse or II subacute, about $\frac{1}{2}$ length of Gl. III. Gl. III lanceolate acute, palea shorter. Grain a little broader than in *S. diandra.* Kunth. Enum. Pl. I. 211. Hook. fil. Fl. Brit. Ind. VII. 247. *S. elongatus;* Br. Prodr. 170. *S. minor,* Kunth. Enum. I. 212. *S. tenacissimus,* Beauv. Agrost. 26. *Vilfa capensis* and *elongata,* Beauv. Agrost. 16. *V. exilis,* Trim. Steud. II. 59. *V. indica,* Trim. Steud. I. 162. *Agrostis elongata,* Lam. Ill. I. 142. *A. indica,* L. Sp. Pl. 63.

Singapore: Mount Faber; Johor: Jambu Larang (Feilding H. B. S. 5759); Pahang: Pekan (Ridley 996); Malacca: Pengkalan Bukit (Ridley 5760); Dindings: Lumut (Ridley 3113); Penang: Government Hill (Ridley). Distrib. All warm countries.

Less common than *S. diandra.* It occurs in open dry spots. A more robust tuft plant than the preceding with longer more crowded and paler spikelets.

3. S. PILIFERUS, Kunth. Enum. Pl. I. 211. Annual 3 to 12 inches tall tufted. Leaves hairy serrulate 1-4 inches long, chiefly at the base. Panicle linear with branches very short erect, 1 to 3 inches long dense. Spikelets $\frac{1}{20}$ to $\frac{1}{16}$ inch long brown. Glume I lanceolate nerveless $\frac{1}{2}$ to $\frac{2}{3}$ length of Gl. III, II longer than III oblong lanceolate, III oblong, palea oblong, grain oblong compressed. Hook. fil. Fl. Brit. Ind. VII. 251. *S. ciliatus,* Duthie Grass N. W. India

29. *Vilfa pilifera,* Trim. Diss. I. 157. II. 23. Sp. Gram. Ic. t. 58.

Malacca (Hervey). Distrib. India. I have seen no specimen from the peninsula.

35. Eriachne, Br.

Tufted wiry grasses with very narrow convolute leaves. Spikelets few, 2 flowered on long pedicels, not jointed on the pedicel, rachilla jointed at the base not produced beyond Glume IV. Glumes I and II equal keeled empty, II and IV narrow stiff usually awned. Palea rigid 2 cuspidate or awned. Lodicules 2 oblong. Stamens 2 or 3. Grain free within the palea and glume.

Species about 24. All Australian except these two.

Spikelets 1 inch long, palea and Gl. III, IV awned	1. *E. triseta.*
Spikelets $\frac{1}{4}$ inch long awns short. Palea not awned	2. *E. pallescens.*

1. E. triseta, Nees. Steud. Syn. Glum. 237. Stems 18-24 inches tall slender leafy. Leaves very narrow 4-6 inches long, ciliate at the sheath mouth. Panicles 6 inches long or less. Spikelets with the awns an inch long. Glume I lanceolate subartistate purple pubescent, II, III and IV yellow hard silky pubescent long awned. Palea awned. Hook. fil. Fl. Brit. Ind. VII. 269. *Megalachne zeylanica,* Thwaites. Enum. Pl. Zeyl. 372, 444.

Malacca: Pengkalan Bukit, Sungei Baru (Ridley); Pahang: Pekan sandy heaths (Ridley 1569). Distrib: Tenasserim, Ceylon.

2. E. pallescens, Br. Prodr. 184. A tufted grass with stems 6 inches to 2 feet tall, leafy leaves very narrow glabrous except the basal sheathing leaves and mouth of the upper sheaths hairy. Panicles narrow or lax spreading. Spikelets small $\frac{1}{4}$ inch long purplish hairy, or nearly glabrous, III and IV villous, awns rather longer than the glumes, palea lanceolate with two very short points. Kunth. Enum. Pl. I. 310. Steud. Syn. Gram. 237. Hook. fil. Fl. Brit. Ind. VII. 269. *E. chinensis,* Hance. Ann. Sc. Nat. IV. 1861, 228. *Aira effusa,* Spreng. Syst. I. 278.

Singapore: Fort Siloso, Galang (Ridley 8046), St. John's Isle; Pahang: Pekan (Ridley 1051); Selangor: Road to Ginting Bidai (Ridley 7773). Distrib. Chittagong, Nicobars, Cochin China, China, Labuan, Borneo, Australia. Common in rocky or sandy dry spots especially near the sea.

36. Cynodon, Pers.

Perennial creeping grasses. Leaves linear narrow. Spikes 3 to 6 terminal spreading, spikelets very small in one or two rows not jointed at the base, rachilla jointed at the base not produced beyond glume III. Glumes 3, I and II short empty, $\frac{1}{4}$ length of III, thin, nerved III broader and longer, awnless, palea as long 2 nerved. Anthers 3. Styles distinct short. Grain oblong or elliptic free.

Species 4. One whole world, the others Australian.

S. Dactylon, Pers. Syn. I. 85. Stems far creeping. Leaves glaucous $\frac{1}{2}$ to $1\frac{1}{2}$ inch long, sheaths broad at the base of stem. Margins of leaf scabrid. Culms 6 inches to a foot tall or more slender. Spikes 4 or 5, 1 or 2 inches long. Spikelets $\frac{1}{16}$ inch long green imbricating. Glumes I and II short lanceolate. Glume III oblong edges pubescent, palea as long narrower with 2 green veins. Stamens 3 yellow. Stigmas short purple. Grain elliptic dark brown dotted, hairy. Kunth. Enum. I. 259. Hook. fil. Fl. Brit. Ind. VII. 288. *Panicum dactylom,* L. Sp. Pl. 58. Whole peninsula in open country.

Singapore: Changi (Ridley 9580); Pahang: Pulau Tawar (Ridley 2141); Pekan (1570a); Malacca Hill; Penang: Sepoy Lines (Curtis 1811). Distrib. Whole of the warmer parts of the world.

37. Chloris, Sw.

Perennial grasses, with linear leaves. Spikes solitary or several fascicled erect or spreading. Spikelets one flowered in one or two rows, rachilla pointed at the base and sometimes prolonged beyond Glume III, and bearing 2 empty glumes. Glumes 3, I and II smaller than III.

Species about 40. All warm parts of the world.

Ch. barbata, Sw. Fl. Ind. Occ. I. 200. Stems creeping ascending geniculate a foot or more tall. Leaves 1 to 18 inches long $\frac{1}{8}$ or more wide scabrid on edges and keel, often tufted subdistichous at the joints. Spikes erect fascicled 5 to 20, $1\frac{1}{2}$-3 inches long purple, rachis scabrid. Spikelets crowded $\frac{1}{8}$ to $\frac{1}{10}$ inch long without the awns. Glumes I and II lanceolate acute purple or green, II the largest. Gl. III ovate broad edged ciliate, awned, awn $\frac{1}{4}$ to $\frac{1}{3}$ inch long; rachilla rather thick prolonged and bearing to semiglobose awned empty glumes. Grain elliptic yellow. Kunth. Enum. Pl. I. 264. Hook. fil. Brit. Ind. VII. 292. *Andropogon barbatus,* Linn. Pl. Jam. Pugill. 30.

Singapore: near the docks and at Pasir Panjang (Ridley 5763, 10402); Johor: saw-mills (5765); Province Wellesley: Batu Kawan (Curtis 2168). Distrib. All the tropics. Introduced but well established near wharves and docks.

38. Eleusine, Gaertn.

Annual or perennials. Leaves linear. Spikes digitate or whorled, laterally compressed not jointed at the base. Spikelets sessile secund in 2 or more rows 3 to 12 flowered, all but the terminal ones perfect, rachilla continuous between the glumes. Glumes few or many. Gl. I lanceolate. Gl. II lanceolate or ovate awned or not. Flowering glumes ovate. Stamens 3. Anthers short. Styles short. Grain with a loose hyaline pericarp, and a tubercled or wrinkled seed.

Species about 7. All warm countries.

Spikes elongate, spikelets pointed forward .. 1. *E. indica.*
Spikes short digitate, spikelets erect .. .. 2. *E. aegyptiaca.*

1. E. indica, Gaert. Fruct. I. 8. Annual, stems erect about 1 to 3 feet tall, glabrous, geniculate or not. Leaves -12 inches long -¼ inch wide. Spikes 5-10 light green whorled spreading or erect with often one solitary one below 3-6 inches long. Spikelets $\frac{1}{12}$-$\frac{1}{8}$ inch long 3 to 5 flowered. Glumes membranous pale green with darker veins. Glume I oblong ovate. Glume II twice as big acute keeled. Keel scabrous or smooth. Upper flowering glumes ovate obtuse or acute, keels scaberulous or not. Palea narrow keels scabrid. Grain oblong pericarp loose, seed tubercled in waved ridges. Kunth. Enum. Pl. I. 273. Hook. fil. l.c. 293. *Cynosurus indicus,* L. Sp. Pl. 72. Common all over the peninsula. "Rumput Sambau."

var. *E. coracana.* Gaert. Fruct. I. 8 t. 1. Stems very stout and tall leaves broader. Spikes stout as much as 6 inches long and half an inch thick straight or incurved grain globose. A cultivated form occasionally occurring in waste ground.

Singapore: Sungei Ujong, Port Dickson and Kuala Lumpur.

2. E. aegyptiaca, Desf. Fl. Atlant. I. 85. Annual creeping. Stems geniculate a foot or more tall rather slender. Leaves linear flaccid 3 inches long ⅛ inch wide hairy. Spikes 2 to 5 digitate 1 inch long, thick, base bearded. Spikelets very many in several rows, $\frac{1}{10}$ to ⅛ inch long flattened 3 or 4 flowered, rachis triangular prolonged to a short point. Glume I boat-shaped acute keeled, II ovate awned, keeled. Awn as long as the glume or shorter. Flowering glumes ovate keeled, with an erect or recurved mucro, scabridly serrate as is the edge, tip notched palea shorter obtuse or acute 2 toothed edges scabrid. Anthers very small. Seed orbicular tubercled. Hook. fil. Fl. Brit. Ind. VII. 295. Griff. Notul. III. 51. Ic. Pl. As. t. 139. f. 79. *E. cruciata,* Lam. Ill. I. 203. t. 48. f. 2. *Dactyloctenium aegyptiacum,* Willd. Enum. Hort. Berl. 1029.

Singapore: Gelang, Holland Road; Pahang: Sungei Meang (Ridley 1413), Pekan (1015); Selangor: Kuala Selangor; Province

Wellesley: Telok Ayer Tawar; Penang Waterfall (Curtis 1797). Dry places. Distrib. All warm countries. Not very common here.

39. Leptochloa, Beauv.

Annuals. Leaves lanceolate or linear. Inflorescence a panicle of slender spikelike branches bearing numerous small spikes, shortly pedicelled or sessile, 1 to many flowered, rachilla slender produced among the flowering glumes jointed at base. Glumes 3 or more thin. Gl. I and II unequal lanceolate, III and following ovate 3 nerved. Palea nearly as long. Anthers 3 small. Styles free.

Species 12. Tropics and subtropics of both hemispheres.

L. chinensis, Nees. Syll. Ratisb. I. (1824), 4. Agrost. Bras. 432. Stem tall 2-3 feet often $\frac{1}{6}$ inch through, geniculate. Leaves linear acuminate 6-18 inches long $\frac{1}{5}$ inch through glabrous. Panicle 6-10 inches long, branches 2 inches long slender suberect or spreading. Spikelets pedicelled $\frac{1}{10}$ inch long, flowers 4 to 6, rachilla slender flexuous. Glumes I and II lanceolate. Glume III and the following ovate obtuse 3 nerved, nerves an edge pubescent. Palea narrower nearly as long. Anthers very small. Miq. Fl. Ind. Bat. III. 389. Hook. fil. Fl. Brit. Ind. VII. 299. *Poa. chinensis,* Linn. Sp. Pl. 69.

Pahang: Kuala Tembeling, Pulau Tawar (Ridley 2140); Kelantan: Kamposa (Ridley); Penang: Bagian Jennal (Curtis 1951). Distrib. India, Siam, China, Malaya, Australia. Damp open ground rather scarce.

40. Phragmites, Trin.

Tall reeds with long narrow leaves. Panicle large decompound. Spikes 3 to 7 flowered pedicelled jointed on the pedicel rachilla jointed between the flowering glumes and about Gl. III, silky with long white hairs. Glumes glabrous membranous I and II unequal lanceolate, 3 nerved, III much longer lanceolate acute male or sterile. Flowering glumes much narower subulate, almost artistate. Paleas much shorter. Stamens 1-3. Styles free, stigmas plumose.

P. Karka, Trim. Steud. Nom. Ed. II. 324. Stems 10 or 12 feet tall $\frac{1}{4}$-$\frac{1}{2}$ inch through, glabrous. Leaves linear acuminate with broad bases 18 inches or more long as much as an inch wide edges scabrid. Panicle over a foot long, brownish purple large and dense. Spikelets $\frac{1}{2}$ inch long. Hook. fil. Fl. Brit. Ind. VII. 304. *P. Roxburghii,* Steud. Syn. Glum. 196. *Arundo Karka,* Retz. Obs. IV. 21. Roxb. Fl. Ind. I. 348. *A. Roxburghii,* Kunth. Rev. Gram. I. 79. Griff. Notul. III. 47. Ic. Pl. As. t. 139. f. 243.

Johor: Bukit Murdom (Kelsall), Sempang Kiri, Batu Pahat (Ridley 11006); Pahang: Pulau Chengei, Pulau Tawar (Ridley 2823); Selangor: Kuala Lumpur (Ridley 81); Malacca: Merlimau

(Derry 236); Panchur (Goodenough); Penang: Ayer Hitam (Curtis). Distrib. Tropical Asia, Africa and Australia. Native name "Gudabong." Common on river banks.

41. Neyraudia, Hook. fil.

A tall rather slender reed, with long linear leaves. Panicle long and lax decompound. Spikelets small pedicelled laterally compressed, rachilla short bearded with a few hairs below the flowering glumes, jointed at the base above the neuter glume and between the flowering glumes. Glumes I and II lanceolate unequal membranous empty. Gl. III neutral paleate. Flowering glumes lanceolate subulate with 2 very short points on either side of the awn, backs ciliate. Palea oblong shorter. Stamens 3.

Species 1. Tropical Africa and Asia.

N. madagascariensis, Hook. fil. Fl. Brit. Ind. VII. 305. Stems about 6 to 12 feet tall smooth solid $\frac{1}{8}$-$\frac{1}{2}$ inch through. Leaves 1 to $2\frac{1}{2}$ feet long $\frac{1}{2}$ inch wide glabrous, scaberulous, base broad. Panicle nodding $2\frac{1}{2}$-3 feet long, branches very slender filiform 6-9 inches long. Spikelets long narrow flattened pale, on slender scabrid pedicels, 4 to 8 flowered. Glumes I and II lanceolate acuminate glabrous, II much longer than I, Gl. III glabrous longer acuminate. *Arundo madagascariensis,* Kunth. Rev. Gram. I. 273. t. 48. *A. Reynaudiana,* Kunth. l.c. 275. t. 49. *A. Zollingeri,* Buse. Miq. Pl. Jungh. 243. *Phragmites Zollingeri,* Steud. Zoll. Cat. 55.

Perak: Thaiping Waterfall (Ridley); Malacca: Selandor (Cantley's Coll.); Negri Sembilan: Seremban (Ridley 10005); Penang Hill (Ridley), Ayer Hitam (Curtis 126); Lankawi Isles. Native name "Rumput Mata Burong Puding."

42. Eragrostis, Beauv.

Annual or perennial grasses generally short glabrous. Leaves narrow. Panicles lax or dense. Spikelets many flowered laterally compressed ovate oblong or linear, rachilla produced articulate or not between the glumes. Glumes many imbricate distichous thin unawned. Glumes I and II short empty. Flowering glumes 3 veined, no callus. Palea deciduous with the glume or persistent. Stamens 1 to 3. Styles free. Stigmas pedicellate. Grain minute.

Species about 100. Whole world, in tropical and warm regions.

§ 1. Cataclastos. Rachilla of spikelets articulate breaking up from above downwards. Small weak plants.

Spikelets very small $\frac{1}{20}$ inch.
Glume II twice as long as Gl. I .. .. 1. *E. tenella.*
Spikelets $\frac{1}{10}$ inch long brown viscid.
Glumes I and II nearly equal .. .. 2. *E. viscosa.*
Tall stiff plants 2-3 feet tall .. .. .. 3. *E. interrupta.*

§ 2. Pteroessa. Rachilla persistent, glumes falling away from the top downwards.

Annuals spikelets ovate or oblong.
Glumes with prominent nerves, paleas caducous .. .. 4. *E. amabilis.*
Glumes with the nerves not prominent paleas persistent .. .. .. 5. *E. malayana.*
Annual spikelets linear .. .. 6. *E. pilosa.*
Perennials stems tall.
Flowering glumes pale green sides flat .. 7. *E. elongata.*
Flowering glumes dark grey sides convex 8. *E. elegantula.*

1. E. tenella, Roem. and Sch. Syst. II. 576. Perennial very variable, stems usually slender spreading numerous from the root geniculate at the base 6 to 12 inches tall. Leaves narrow linear or lanceolate linear glabrous except for the cilia at the mouth of the sheath. Panicle 2-3 inches tall, lax spreading, branches $\frac{1}{4}$- inch long. Spikelets very small $\frac{1}{20}$ inch long pale green, tinted with violet. Glume I very short ovate. Glume II nearly twice as long. Flowering glumes ovate obtuse 3 or 4 palea narrower as long keels strongly ciliate. Stamens minute. Stapf. Fl. Brit. Ind. VII. p. 315. *E. despiciens,* Schultes. Mant. II. 318. *E. plumosa,* Link. Enum. Hort. Berol. I. 192. *Poa amabilis,* Linn. Sp. Pl. 68. *P. plumosa,* Retz. Obs. IV. 20. *P. tenella,* L. Sp. Pl. 69. Retz. Obs. V. 19.

Singapore: Gardens, Changi (Ridley 5763), Pulau Ubin; Pahang: Pekan (Ridley 1221); Malacca: Tanjong Kling, Town (Ridley), Ayer Panas (Cantley's Coll.); Penang: The Fort (Curtis 2169); Kelantan: Kamposa (Ridley 1688). Distrib. India, Siam. Common weed in waste ground. "Rumput Tulong Belalang."

2. E. viscosa, Trin. Mem. Acad. Petersb. Ser. VI. I. 297. Tufted with long slender roots geniculate ascending or erect slender stems viscid about 6 to 9 inches tall. Leaves narrow convolute when dry 1-3 inches long, mouth of sheath bearded. Panicle 1-2 inches long rather dense, branches crowded. Spikelets about twice as big as those of *E. tenella* brown viscid. Glumes I and II nearly equal. Flowering glumes 4 or 5 to 16. Grain very small elliptic dark red. *E. tenella* var. *viscosa,* Stapf. l.c.

Singapore: Changi (Ridley 6107); Province Wellesley: Teluk Ayer Tawar (Ridley 6998); Penang: Dato Kramat (Curtis 1827). Distrib. India and Africa. Sandy places near the sea.

3. E. INTERRUPTA, Beauv. Agrost. 71 (not of Roem. and Schultes nor Trin.). Perennial 2 or 3 feet tall. Stems $\frac{1}{8}$-$\frac{1}{16}$ inch through glabrous. Leaves linear acuminate 12 inches long $\frac{1}{4}$ inch wide. Panicle variable, stiff interrupted or flaccid long and narrow over a foot long, branches slender short or long 3 inches, solitary or subwhorled. Spikelets $\frac{1}{8}$ inch long brownish pedicelled, rachilla jointed breaking up from the top downwards. Glumes I and II ovate boat-shaped blunt subequal. Flowering 6 to 12 longer ovate obtuse, palea smaller and narrower glabrous. Stamens 2 very small. Stapf. Fl. Brit. Ind. VII. 316. *E. nutans,* Nees. Steud. Nom. Ed. II., i. 563. *E. diplachnoides,* Steud. Syn. Gram. 268.

Pahang: Pekan (Ridley 1007). Distrib. India and Africa.

Rare on sandy heaths. The only variety I have seen here is the var. *diplachnoides,* Stapf. with a long lax panicle or branches not whorled.

4. E. AMABILIS, Wight. and Arn. Hook. and Arn. Bot. Beechy Voy. 251. Annual 6 to 18 inches tall slender. Leaves linear acuminate 2-4 inches long, $\frac{1}{4}$ inch wide flaccid except for a few hairs at the mouth of the sheath. Panicle compact eventually spreading usually with slender solitary branches. Spikelets flat ovate occasionally oblong $\frac{1}{8}$-$\frac{1}{4}$ inch long, rachilla persistent. Glumes falling off with the paleas from the base empty glumes. Flowering glumes 20 to 50 close set boat-shaped keeled, keel scabrid very short mucronulate pale or pink, with two raised green ribs on the sides, palea shorter elliptic. Keels winged minutely scabrid. Grain ellipsoid flattened. Stapf. Fl. Brit. Ind. VII. 317. *E. polymorpha,* Trin. Steud. Nom. Ed. II., i. 364. *E. rubens,* Hochst. Miq. Analect. Bot. II. 26. Steud. Syn. Gram. 265. *E. unioloides,* Nees. Steud. l.c. 264. *Poa multiflora,* Roxb. Fl. Ind. I. 338.

Singapore: Common in waste ground, Tanglin (Ridley 64); Pahang: Pekan; Malacca: Ayer Panas (Cantley's Coll.); Kelantan: Kamposa; Penang Waterfall (Curtis 1800). Distrib. Tropical Asia. Very common, somewhat variable according to locality in development of panicle, and colouring. Native name "Rumput Kulam Padang."

5. E. MALAYANA, Stapf. Fl. Brit. Ind. VII. p. 317. Annual, forming tufts. Stems rather slender 7-18 inches tall geniculate. Leaves very narrow linear 3 inches long $\frac{1}{16}$ inch wide convolute when dry. Panicle rather narrow or branches at length spreading 2 inches long, branches $\frac{1}{2}$-1 inch long. Spikelets pale $\frac{1}{16}$ inch long ovate flattened or linear oblong. Glumes closely imbricate ovate rounded

obtuse boat-shaped, sides convex with no raised veins. Glumes I and II unequal smaller than the flowering glumes. Paleas persistent large, nerves scabrid. Grain minute black.

Singapore (Herb. Cantley 3075 in part); Freshwater Isle (Ridley 453); Pahang; Pekan (Ridley); Malacca (Hervey); Perak (Wray). Distrib. Borneo and Banca. Not common or easily overlooked, as it somewhat resembles pale forms of *E. unioloides.*

6. E. PILOSA, Beauv. Agrost. 71. Annual 3 to 36 inches tall. Stems slender weak tufted. Leaves -3 inches long very narrow linear acuminate minutely scabrid above on the nerves, mouth of sheath long ciliate. Panicle variable -6 inches long, very lax with slender filiform branches 1-2 inches long glabrous or rarely hairy, sub-whorled. Spikelets $\frac{1}{8}$-$\frac{1}{5}$ inch long linear grey green, 5 to 12 flowered, rachilla slender flexuous. Glumes I and II hyaline deciduous. Flowering glumes ovate acute keel scabrid. Palea narrower shortly persistent narrow. Keels ciliate. Grain oblong truncate chestnut. Stapf. Fl. Brit. Ind. VII. 323. *E. indica,* Steud. Syn. Gram. 264.

Singapore: Garden weed; Johor (Feilding); Selangor: Batu Caves Estate (Ridley 8161); Penang Hill (Ridley 10618), (Curtis 1804). Distrib. most warm countries.

7. E. ELONGATA, Jacq. Eclog. Gram. 3, t. 3. Perennial grasses, with geniculate stems 10 to 18 inches tall slender. Leaves $1\frac{1}{2}$-3 inches long very narrow glabrous except the ciliate sheath. Panicle very variable 3-6 inches long, branches usually simple 1 inch or less long slender. Spikelets shortly pedicelled, pedicels scabrid, rather crowded $\frac{1}{8}$ to inch long. Flowers 10-25. Glumes I and II lanceolate keeled, keel scabrid nearly equal tinted violet. Flowering glumes ovate lanceolate pale green. Keel and a rib on each side scabrid green, tip violet. Palea shorter narrower strongly ciliate on the edge. Stapf. Fl. Brit. Ind. VII. 319. *E. Browneana,* Nees. Nov. Act. Nat. Cur. XIX. Suppl. I. 205. *E. Brownii,* Nees. Fl. Austr. 396. Steud. Syn. Gram. 279. *E. Cumingii,* Steud. l.c. 266. *E. orientalis,* Nees. Nov. Act. l.c. 206. *E. pubescens,* Steud. l.c. *E. Willdenoviana,* Nees. Hook. and Arn. Beech. Voy. 252. *E. zeylanica,* Nees. and Mey. Nov. Act. l.c. 204.

Singapore common (Cantley 3064), Galang (Ridley 10400), Freshwater Isle; Changi (6108); Pahang: Pekan (Ridley 1375); Malacca: Ayer Panas (Cantley's Coll.); Selangor: Kuala Lumpur (Ridley 10169); Penang: Waterfall (Curtis 1805); Lankawi: Kwah (Ridley 8318). Distribution Trop. Asia, Australia. Common in waste ground and grassy plots "Rumput Kutu Kerbau."

8. E. ELEGANTULA, Steud. Syn. Gram. 266 (not of Nees.). Perennial, with stiff stems 2 to 4 feet tall glabrous, rhizome short, roots

stout. Leaves linear acuminate very narrow 3 to 7 inches long glabrous. Panicle nodding 3 to 6 inches long, branches slender 2 inches long or less, spreading or usually suberect, scabrid. Spikelets ¼ inch long dark grey. Glumes I and II subequal, I a little smaller ovate keeled, keel scabrid. Flowering glumes ovate acute viscid sides convex, side nerve often distinctly raised. Palea about as long edges closely ciliate scabrid caducous with the glume. Stamens 3 very small. Grain oblong. Stapf. Fl. Brit. Ind. VII. 318. *E. luzoniensis,* Steud. l.c. 266. *Poa elegantula,* Kunth. Rev. Gram. I. 340.

Singapore: Chasseriau Estate (Ridley); Malacca: Bukit Sabukor (Ridley 3538); Pahang: Kuala Pahang (Ridley 997, 1552); Perak: Taiping; Kelantan: Kamposa (Ridley). Distrib. India. Common in damp spots by streams. Easily recognised by its tall stiff stems and dark grey green spikelets.

43. Myriostachys, Hook. fil.

A tall glabrous perennial grass with long narrow linear leaves. Panicle dense of very numerous short branches solitary or in fascicles of 2 or 3 or more. Spikelets 4 to 20 flowered pale on pedicels jointed at the base scabrid. Glumes I and II short ovate lanceolate keeled and awned, keel scabrid. Flowering glumes coriaceous ovate cuspidate keeled scabrid, palea nearly as long, keels ciliate. Stamens 3 very small. Stigmas long, penicillate. Grain oblique ovoid obtuse.

Species 1. India, Ceylon, Malay Peninsula.

M. Wightiana, Hook. fil. Fl. Brit. Ind. VII. 327. var. *longispicula.* Stems 6 to 10 feet tall, moderately stout. Leaves long acuminate 2 feet long ¾ inch wide smooth and glabrous. Panicle a foot long, branches 1¾ inch long scabrid. Spikelets ¼ to ½ inch long, flowers 8-20 rachilla stout flexuous. Glumes I and II short with longer awns, scabrid, II longer than I. Flowering glumes hardly awned, palea boat-shaped. *Eragrostis Wightiana,* Benth. Ic. Pl. XIV. 62. t. 1381. *Leptochloa Wightiana,* Nees. Steud. Syn. Glum. 209. *Dinebra verticillata,* Wight. Steud. l.c.

Penang: Telok Bahang (Curtis 882); Province Wellesley. In damp spots near the sea, local. "Rumput Laut."

44. Lophatherum, Brngn.

Tall rather slender perennial forest grass, with broad lanceolate petioled leaves. Panicle of few branches, spikelets secund narrowly lanceolate 1 flowered, rachilla not jointed at the base prolonged beyond the flowering glume, bearing several terminal empty awned glumes. Glumes I and II empty, III longer awned or mucronate. Styles connate at the base, with long stigmas. Grain oblong.

Species 1. India, China, Japan, Malaya.

L. GRACILE, Brngn. Duperr. Voy. Bot. 50. t. 8. Stems slender or fairly stout woody 2 to 3 feet, geniculate or not. Leaves lanceolate acuminate narrowed at the base subpetioled 6 to 7 inches long -1½ inch wide glabrous. Panicle of few long distant branches 4 to 8 inches long. Spikelets secund on the branches distant 1 flowered green shortly pedicelled ¼ inch long lanceolate, ciliate at the base. Glume I oblong obtuse ciliate at tip. Gl. II longer. Gl. III lanceolate awned twice as long, awn short. Palea shorter and narrower. Upper glumes about 9 narrow empty with scabrid awns. Styles yellow. Hook. fil. l.c. 331. Miq. Fl. Ind. Bat. III. 400. *L. elatum,* Zoll. and Mor. Syst. Verz. Zoll. 102. *L. japonicum, multiflorum* and *dubium,* Steud. Syn. Gram. 300. *L. lehmanni,* Nees. (Steud. l.c.). *Acroelytrum japonicum,* Steud. Flora XXIX. 21. *Allelotheca Urvillei,* Steud. Syn. Gram. 117.

Singapore: Garden Jungle, Chan Chu Kang (Ridley 1701); Johor: Bukit Banang; Malacca: Mount Ophir; Pahang: Kuala Pahang; Sungei Ujong (Cantley); Perak: Taiping Hills to 5000 feet alt.; Negri Sembilan: Gunong Angsi; Kedah: Gunong Jerai. Distrib. All tropical Asia and Japan, except Southern India. Native names "Rumput Kelurat," "Rumput Kururut," "R. Jarang," "Ubi Buluh." Common in woods.

45. CENTOTHECA, Desv.

Tall perennial grass. Leaves broadly lanceolate acute narrowed at the base, ligule short papery lacerate. Panicle lax with spreading branches. Spikelets secund, green pedicellate. Glumes 4 or 5. I and II oblong ovate empty, III, IV (and V when present) bisexual, IV edged with strong white spines with swollen bases. Stamens 2-3.

Species few 1 or 2. Tropical Africa, Asia and Australasia.

C. LAPPACEA, Desv. Nom. Bull. Soc. Philom. II. (1810) 189. Journ. Bot. 1 (1813) 70. Stems 1 to 3 feet tall, from a short rootstock. Leaves 3-7 inches long ½-1 inch wide many nerved glabrous or sparsely hairy, mouth of sheath hairy. Panicle 6-12 inches long variable, branches 3-6 inches long. Spikelets ⅛ inch long, pedicel and rachis scabrid. Glumes I and II oblong ovate green with white edge, I scabrid on the keel shorter than II. Gl. III longer than II mucronate bisexual and paleate. Gl. IV rather shorter mucronulate edged with strong white tubercle based spines, bisexual and paleate. Gl. V absent or small. Stamens 2-3 brown. Styles yellow short free. Grain ovoid acute. Kunth. Rev. Gram. I. 317. t. 70. Hook. fil. Fl. Brit. Ind. VII. 332. Griff. Notul. III. 62. Ic. Pl. As. t. 152. f. 1.

Singapore whole island; Johor (Ridley 1706), Pulau Aor (Feilding); Malacca: Pulau Besar (Ridley), Ayer Panas (Cantley's Coll.);

Pahang: Tahan River; Negri Sembilan: Bukit Tumiang (Cantley's Coll.); Dindings: Lumut (Ridley); Penang: Government Hill (Curtis 1815). Distrib. Tropical Africa, Asia and Polynesia. Common in woods. Native names "Rumput Darah," "Rumput Silat Kain." The spikelets adhere by their spines to cloth, or to the fur of animals and are so carried about.

46. Lepturus, Br.

Annual or perennial slender grasses. Spikes terminal simple, straight or curved, rachis hollowed. Spikelets 1-2 flowered embedded in the hollows of the rachis sessile solitary. Glumes 3 or 4. Gl. I minute or absent, II longer than flowering glumes, linear rigid acute, III and IV much shorter hyaline. Palea 2 keeled. Stamens 1 to 3 ovary glabrous.

Species 6. Tropics and temperate regions of the whole world.

L. repens, Br. Prodr. 207. Perennial creeping with ascending geniculate stems woody a foot tall. Leaves 3-6 inches long $\frac{1}{8}$ inch wide linear acuminate glaucous glabrous. Spikes straight 2-3 inches long. Spikelets 2 flowered rachis stout glabrous. Glume I absent. Gl. II lanceolate long acuminate striate. Flowering glumes shorter thin elliptic concave. Rachilla elongate bearing an imperfect flower. Brngn. Duperr. Voy. Bot. 57. t. 16. Kunth. Enum. Pl. I 463. Hook. fil. Fl. Brit. Ind. VII. 365. *Rottboellia repens,* Forst. Prodr. 9. *Monerma repens,* Beauv. Agrost. 117.

Johor: Pulau Tinggi (Feilding); Pahang: Sungei Meang (Ridley 1422), Rumpin River. Distrib. Ceylon, Malaya to Australia. In sand along the seashore.

47. Bambusa, Schreb.

Shrubby or arboreous grasses usually tall and tufted. Culm-sheaths broad, limb often triangular. Leaves linear or lanceolate shortly petioled not tessellate. Inflorescence a large or slender panicle, with heads on spike-like branches, or panicles of spikes. Spikelets 1 to many flowered. Empty glumes at the base 1 to 4. Flowering glumes ovate lanceolate, uppermost imperfect. Lodicules 2 or 3 membranous ciliate rarely absent. Stamens 6. Ovary oblong or obovate tip hairy. Stigmas 2 or 3. Grain oblong to linear oblong furrowed on one side.

Species about 50. India, Malaya, Australia.

Arborescent, branches spiny	1. *B. spinosa.*
Culms tall and slender not spiny	2. *B. Wrayii.*
Shrubby stems ¼ inch through.	
Spikelets 1-2 inches long in distant whorls ..	3. *B. Ridleyi.*

Spikelets ¾ inch long in short panicles .. .. 4. *B. magica.*
Scandent flowers unisexual .. .. .. 5. *B. elegans.*

1. B. SPINOSA, Bl. Bot. Zeit. 1825. p. 580. A tall dark green bamboo with crowded culms 30 to 60 feet tall and 3 or 4 inches through with numerous stiff thorny branches. Culm-sheaths 5 to 6 inches long thick, 3 to 4 inches broad striate and covered with long stiff tawny bristles mouth broad convex, violet brown and yellow stripped when young. Leaves 5 or 6 together at the end of the branchlets linear lanceolate 3-6 inches long broad abruptly rounded at the base into a very short petiole tip scabrous, glabrous above glaucous below, edges scabrous sheaths striate covered with appressed hairs ending in a small recurved callus with a few slender bristles at the mouth. Ligule short truncate fimbriate. Panicle large branching terminal with spicate branchlets bearing heads of many imperfect and few fertile spikelets. Spikelets 1-1½ inch long compressed narrow with 2-3 empty glumes, 6 to 8 fertile and 1-2 terminal imperfect flowers, empty glumes ovate acute, flowering glume ovate acuminate, palea as long or longer broad concave 2 keeled, keels ciliate. Anthers blunt. Ovary ovate glabrous, style short. Stigmas 3 plumose. Grain ovate. *B. Blumeana,* Schultes f. Syst. Veg. VII. 2. 1343. Kunth. Enum. I. 431. Munro Trans. Linn. Soc. XXVI. 101. Gamble l.c. 50. Pl. 47.

Pahang: Pekan (Ridley). Distrib. Malay Islands. This may have been introduced into the neighbourhood of Pekan, but is possibly wild. It is commonly known as Bulu Duri.

2. B. WRAYII, Stapf. Kew Bulletin 1893, 14. Graceful and semi-scandent bamboo. Culms 40 to 60 feet tall 1 inch through at the base very thin and weak, internodes yellow glabrous shining hollow, the third or fourth from the ground very long as much as 7 feet. Culm-sheaths unknown. Leaves linear lanceolate 8 to 10 inches long 1 inch wide rounded at base or narrowed into a short petiole, apex acuminate leaf sheaths pale glabrous striate ending in a shining callus auricled with a few stiff hairs, ligule truncate short with long stiff hairs. Inflorescence a large panicle with clusters of spikelets at the nodes or in short spicate branches. Spikelets in short spikes, subtended with an oblong truncate bract and a short ciliate keeled bractlet then 2 imperfect spikelets, and one fertile one. Empty glume solitary ovate lanceolate acute glabrous except the ciliate edges. Flowering glumes ovate lanceolate acute glabrous. Palea equal or shorter 2 keeled rough or ciliate on the keels bearing between the keels the rachilla ½ inch long terminal by an imperfect flower. Stamens. Anthers glabrous blunt. Style very short with 3 long arms. Fruit oblong with a short cylindric beak. Hooker Ic. Pl. 2253. Fl. Brit. Ind. VII. 394. Gamble. Ann. Bot. Gard Calc. Vol. VII. p. 49. Pl. 46.

Perak: Gunong Tuas at 4500 to 5500 feet elevation (Wray). Endemic. "Buluh Bersumpitan." The Semangs use the large sized canes for the outer case of the blow-pipe (Sumpitan) and the small ones for the inner tube.

3. B. Ridleyi, Gamble. Ann. Bot. Gard. Calc. Vol. p. 35. Pl. 32. A slender stemmed tufted plants with culms about 9-10 feet long and about ¼ inch through, thin whorled fistulose internodes 18 inches long. Culm-sheaths 4½ inches long smooth, glabrous mouth with long cilia, limb lanceolate acuminate 3 inches long. Leaves oblong lanceolate acuminate narrowed at the base 10 to inches long ¾ inch wide tip scabrid, sheaths short, ending in a short callus, truncate ligule long bifid ¼ inch long lobes broad rounded edged with stiff bristles. Inflorescence on long leafy or nude branches. Spikelets 1-2 inches long, a few in distant whorls glabrous lanceolate. Glumes empty 2 to 4 ovate mucronate ribbed. Flowering glumes long ovate lanceolate glabrous mucronate ribbed. Palea shorter oblong acute bifid. Keels minutely ciliate at tip. Anthers long narrow apiculate setose. Style with 3 plumose stigmas. Lodicules 3, 2 lanceolate fimbriate the third short ovate, many nerved. Hook. fil. Fl. Brit. Ind. VII. p. 388.

Singapore: Bukit Timah (Ridley 1693). Endemic. This very slender bamboo only grows in one or two spots in dense forests in Bukit Timah.

B. nana, Roxb. Fl. Ind. II. 190. The hedge bamboo, a native of China and Japan is cultivated largely for hedges and remains often on abandoned garden sites. I have seen it flowering in Singapore, but it rarely flowers below 2000 feet elevation. It is known as Buluh China.

4. B. magica, Ridl. Journ. Roy. As. Soc. Str. Br. Vol. XLIV. p. 208. Stems about 20 feet tall, and half inch through or less, smooth, branches slender tufted at the nodes, internodes 1 inch long. Leaves lanceolate acuminate glabrous 3 inches long ½ inch wide margins scabrid, thickened base narrowed into a very short petiole, sheath auricled with white cilia on the auricles. Spikelets in short panicles lanceolate pale ¾ inch long ¼ inch across, empty glume 1 ovate lanceolate. Flowering glumes 7- lanceolate mucronulate keeled margins ciliate. Lodicules 3 lanceolate edges ciliate.

Perak: Gunong Berumbun (Wray 1560).

The "Buluh Perindu." This plant is referred to *B. nana,* Roxb. by Gamble Ann. Gard. Calc. VII. 41. It is very improbable that Wray's plant could have been introduced on Berumbun and the adjacent hills, and it differs from the cultivated plant in the taller stem, quite glabrous leaves, less strongly ribbed glumes ciliate at the edge.

Wray writes of it (Journ. Roy. As. Soc. S. Br. Vol p. 159. "The small bamboo called by the Malays "Buluh perindu" is extremely plentiful on Berumbun and comparatively scarce on the other hill. I was fortunate in being able to collect flowering specimens of this elegant little bamboo which is credited with mystic properties by the natives and is in much request by love-lorn swains whose mistresses are cold and irresponsive."

Bambusa vulgaris, Schrad. said to be a native of Java is occasionally planted. Wray gives the name "Buluh Pan" for it.

5. B. ELEGANS, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XLIV. p. 209. A climbing bamboo. Flowering branches slender $\frac{1}{8}$ inch through purplish. Branchlets in whorls a foot apart about 10 in a whorl slender 10 inches long with numerous dry bracts at the base. Leaves lanceolate acuminate 2-3 inches long $\frac{1}{2}$ inch wide finely ribbed with a very short petiolule and short oblong ligule. Flower spikes numerous not whorled nor crowded. Bracts oblong broad dry and pale, outer one $\frac{3}{8}$ inch long, inner ones smaller more ovate mucronulate. Spikelets $\frac{1}{2}$ inch long. Basal spikelet of 5 empty glumes, II flower $\frac{1}{4}$ inch long. Glumes I and II lanceolate green tipped purple edges ciliate, palea not keeled edges ciliate, enclosing a conic cylindric pistil with 2 short stigmas no lodicules, III flower male, glume and palea as in II. Stamens 3 with very short filaments, flowers 4 and 5 abortive. Rachilla flattened dilated upwards ciliate.

Selangor: Semangko Pass (A. M. Burn-Murdoch).

The flowers were mostly very young and nearly all destroyed by insects. The full sized leaves were not sent. I am doubtful as to the genus even of this plant. I only saw three stamens in the one fertile flower and no trace of a pistil, in another flower there were no stamens but a pistil only.

48. GIGANTOCHLOA, Kurz.

Arborescent or climbing bamboos generally very large. Culm-sheaths hard, hairy above auricled. Leaves large. Panicle compound large, with long branches, heads distant of few or many spikelets, fertile and sterile mixed. Empty glumes 2 or 3, ovate or lanceolate. Fertile glume similar or longer. Paleas 2 keeled, keels ciliate. Lodicules none or 1 to 3. Stamens 6, filaments connate into a tube thick at first, afterwards thin membranous elongate. Ovary hairy. Stigmas 1-3 hairy. Grain usually oblong or linear, grooved. Pericarp membranous.

Species 11. Burma and Malaya.

Spikelets ovate rounded small glabrous 1. *G. verticillata.*

Spikelets oblong ovate flattened layer hairy	2. *G. Scortechinii.*
Spikelets narrow cylindric acute.	
Ligule of leaf short.	
Palea oblanceolate	3. *G. Wrayi.*
Palea linear	4. *G. Kurzii.*
Ligule of leaf long.	
Spikelets dimorphic glabrous	5. *G. heterostachya.*
Spikelets conic, glumes fringed with hairs	6. *G. ligulata.*
Spikelets over an inch long broad flattened	7. *G. latispiculata.*

1. G. VERTICILLATA, Munro. Trans. Linn. Soc. XXVI. 124. A large bamboo 60 to 80 feet tall and 4 or 5 inches through green, or striped with yellow when young, internodes 18 inches long whorls rather thin. Leaves oblong lanceolate narrowed at the base 10-18 inches long 1½-2½ inches wide glabrous, hairy beneath when young margins scabrous keel narrow, sheaths hairy at first, glabrescent, top truncate with a narrow callus and short rounded auricles, ligule short. Panicle compound with long branches 2 feet or more of distant heads of spikelets, on a rather stout rachis. Heads small to 1 inch through dense. Spikelets ovate subacute pale ⅛-¼ inch long, minutely pubescent. Empty glumes 2 or 3 ovate acute broad edges ciliate. Flowering glumes similar mucronate. Palea shorter oblong bimucronate, keels 2 ciliate. Lodicules variable, 1 to 3, oblanceolate fimbriate. Stamens exsert, tube membranous, anther yellow ovary suborbicular very hairy, style short stigmas 2-3. Gamble l.c. 61. Pl. 52. *G. maxima,* Kurz. Tijdschr. Ned. Ind. XXVII. 226. *Bambusa verticilata,* Willd. Sp. Pl. II. 245. *B. pseudarundinacea,* Steud. Syn. 330.

Singapore cultivated: Tivoli (Ridley 119). Distrib. Malay Islands.

2. G. SCORTECHINII, Gamble l.c. 62. Pl. 53. Stems 30 to 80 feet tall, 2-4 inches through internodes 1½ feet long. Culm-sheaths 6-8 inches long not much narrowed upwards covered with rather long scattered bristles mixed with numerous short white ones. Leaves -12 inches long -2 inches wide oblong lanceolate glabrous above softly hairy pubescent beneath, with occasionally long stiff black bristles scattered over it, base broad with a very short petiole, sheath densely pubescent, with a pubescent callus, and two rounded auricles, with a few stiff white bristles. Panicle large, of stout branches, 2 feet long, rachis pubescent, with tufts of spikelets 1-4 inches apart. Spikelets few cylindric acute 1 inch long densely hairy. Empty glumes ovate mucronate, 2 or 3. Flowering glumes 3 to 5, similar

longer. Palea shorter tip bifid keels ciliate. Lodicules none. Stamen tube long. Anthers yellow apiculate. Ovary rounded, style long glabrous stigma bifid, grain glabrous ellipsoid with an obtuse truncate hairy top. Hook. fil. Fl. Brit. Ind. VII. 398.

Selangor near the Kuala Lumpur Caves (Ridley 8170) on the Semangko Pass to 2700 feet alt. forming forests (Ridley 8481), (Curtis 3746), Bukit Hitam (Ridley 7786); Perak (Scortechini); Ulu Kerling; Ulu Selangor (King's Coll. 8572); Upper Perak (Wray 3433). Endemic. A very fine bamboo "Buluh Rayah."

3. G. Wrayi, Gamble l.c. 64. Pl. 55. Culms 3 inches through, branchlets smooth clothed with glaucous scurf. Leaves 12 to 15 inches long, 2 to 2·5 inches wide oblong lanceolate cuspidate acuminate roundly attenuate at the base into a petiole $\frac{1}{5}$ to $\frac{3}{10}$ inch long, tip subulate setaceous, smooth above pale softly strigosely hairy beneath edges scabrid, midrib broad, sheaths smooth ending in a narrow callus with a short auricle, fringed with long stiff white bristles ligule short pubescent. Panicle compound branches with heads of few fertile flowers and several sterile flowers and many short bracts rachis slender pubescent, joints from $\frac{1}{2}$ to 2 inches long. Spikelets conical somewhat flattened $\frac{1}{5}$ inch long acute. Empty glumes 2 to 3, oval mucronate fringed with stiff blackish hairs. Flowering glumes similar but longer. Palea narrow oblanceolate tip bifid, keels 2 not or faintly ciliate. Stamenal tube thick finally long membranous. Anthers very long with a hairy setaceous point. Ovary narrowly ovate hairy, style long slender, stigmas plumose. Hook. fil. l.c. 399.

Perak: Bukit Gantang (Wray 1895). Native name "Buluh Plang." Endemic rare.

4. G. Kurzii, Gamble l.c. 65. Pl. 56. Culm-sheaths glabrous cylindrical about 6 inches long, 3 inches broad, limb longer recurved lanceolate acuminate decurrent in a narrow black glabrous band lining the top of the sheath and ending in a small round black auricle ligule narrow. Leaves linear lanceolate 8 to 13 inches long $\frac{1}{2}$-$1\frac{1}{2}$ inch wide base narrowed into a petiole $\frac{1}{5}$ inch long, glabrous above whitish with scattered hairs beneath edges scabrous, midrib narrow, sheaths hairy when young finally smooth truncate with small rounded auricles. Panicle of rather stiff slender branches with small heads of few spikelets $\frac{1}{2}$ an inch to 1 inch apart, rachis slender smooth. Spikelets cylindric acuminate half an inch apart. Glumes striate at the top, mucronate glabrous except for a strong fringe of hairs on the edge. Empty glumes 2 or 3 ovate. Flowering glumes similar but longer narrower, with a longer mucro. Palea linear blunt, keels ciliate. Stamenal tube short. Anthers blunt apiculate grain truncate glabrous. Hook. fil. Fl. Brit. Ind. VII. p. 5.

Dindings: Lumut (Ridley 3114); Perak: Taiping (Wray 134). Distrib. Tenasserim and Siam (Kasum, Curtis 3237). "Buluh Akar," "Buluh Mata Rusa." Rare.

5. G. HETEROSTACHYA, Munro. Trans. Linn. Soc. XXVI. 125. A graceful bamboo 30 feet long, culms thin whorled, sheaths not known. Leaves linear lanceolate 4 to 11 inches long $\frac{1}{2}$ to 1 inch wide base rounded into a short petiole $\frac{1}{10}$ inch long, point long and setaceous glabrous except for a few hairs on the midrib, margins scabrid, sheaths striate ending at the mouth in a shining callus, and rounded glabrous auricle, ligule long dentate glabrous or long ciliate. Panicle long, with rather slender branches of distant many flowered heads in the axils of chaffy bracts, heads 1-4 inches apart -1$\frac{1}{2}$ inch through. Spikelets of two kinds sterile $\frac{1}{2}$-$\frac{3}{4}$ inch long of glumes sheathed one within the other, fertile 1 to 1$\frac{1}{3}$ inch long $\frac{1}{5}$ inch wide glabrous oblong compressed, with 1 to 3 empty glumes, 4 to 5 fertile flowers; 2 to 3 incomplete flowers all on the joints of a consistent rachilla. Empty glumes ovate acute of mucronate, flowering glumes similar palea shorter obtuse with 2 ciliate keels. Lodicules 2 to 3 oblong or ovate long fimbriate. Staminal tube short at first. Anthers apiculate. Ovary ellipsoid very hairy. Style hairy. Stigmas 1 to 3. Kurz. Indian Forester 345. Gamble l.c. 66. Pl. 57. Hook. fil. Fl. Brit. Ind. VII. 400.

Malacca: Ayer Panas near houses (Griffith 6731). Without locality (Cantley's Coll.). Endemic. I have only seen a portion of an inflorescence obtained by Cantley's collector under the name of "Buluh Tilan."

6. G. LIGULATA, Gamble l.c. 67. Pl. 58. Leaves 12 to 16 inches long, 2-3 inches broad oblong lanceolate base narrowed unequal into a flat petiole $\frac{1}{8}$ to $\frac{1}{3}$ inch long, glabrous paler beneath tip scabrid, midrib broad, sheaths smooth shining ending in a cushion-like shining rounded ciliate or glabrous callus, ligule as much as an inch long, bifid with 2 long acuminate membranous lobes. Panicle long with rather stout branches about 2 feet long with distant heads as much as an inch through and $\frac{1}{2}$ to 1 inch apart, smaller and crowded towards the tip, with large straw coloured bracts at the base, spikelets cylindric acuminate $\frac{1}{2}$ inch long. Empty glumes ovate mucronate edged with black hairs, 2-4. Flowering glumes longer mucronate edged with black hairs, tip striate. Fertile flowers 3 to 4. Palea shorter blunt or bimucronate, keels 2 ciliate. Lodicules none. Staminal tube thickened at last membranous. Anthers long narrow apiculate hairy at tip. Ovary depressed shining hairy. Style in stigma slender plumose. Hook. fil. Fl. Brit. Ind. VII. 400.

Pahang: Kuala Pahang (Ridley 5597); Perak: Kuala Wok (Wray 345), Ipoh (Curtis 3180). Endemic. "Buluh Telor."

7. G. LATISPICULATA, Gamble l.c. p. 67. Pl. 59. A tall bamboo 50 feet high. Culm-sheaths not known. Leaves pale broadly lanceolate 12 to 14 inches long 1-1½ inch broad base narrowed decurrent into a very short petiole glabrous tip acuminate sheaths smooth finely striate keeled with a narrow callus and bifid ligule. Panicle of slender branches 18 inches long, with distant heads with few large flattened spikelets 1-2 inches long ¼ inch broad. Empty glumes 2-3 ovate lanceolate mucronate ribbed glabrous. Flowering glumes ovate lanceolate long acuminate ribbed faintly ciliate or not on the edge hairy within. Palea shorter than glume with 2 ciliate keels. Lodicules obovate 3-5 nerved ciliate. Stamens exsert tube membranous at length. Anthers apiculate penicillate. Ovary narrowly ovoid pubescent. Style slender stigmas 3. Hook. fil. Fl. Brit. Ind. VII. 400.

Malacca (Cantley's Coll.). Endemic. Only once collected. "Buluh Tilan Minyak. Used for making baskets.

49. OXYTENANTHERA, Munro.

Arborescent or scandent bamboos usually small unarmed. Culm-sheaths varied usually rather narrow. Leaves usually small petioled. Panicle large with spicate heads of few or many spikelets. Spikelets narrow elongate conical of one, two or three flowers. Empty glumes 1-3. Flowering glumes ovate elongate mucronate. Palea of lower flowers two keeled of uppermost convolute little or not keeled. Lodicules 0. Stamens monadelphous exserted, tube thickened at first after membranous. Anthers narrow acute. Ovary ovoid, style slender. Stigmas 1-3. Grain elongate beaked.

Species 9. Africa, India.

Glumes edged with black cilia	1. *O. nigrociliata.*
Glumes pubescent with pale hairs	2. *O. sinuata.*

1. O. NIGROCILIATA, Munro. Trans. Linn. Soc. XXVI. 128. A small slender bamboo about 15-20 feet tall. Culms dark green ½-1 to 4 inches through with thin walls. Culm-sheaths 6 or more inches long covered with brown hairs edged with brown cilia slightly narrowed upwards and tip truncate blade ovate lanceolate decurrent on the sheath with a bright green rounded naked auricle hairy inside. Leaves 6-12 inches long or more 1-2 inches wide lanceolate acuminate ending in a twisted scabrid point margins scabrous, glaucous beneath sheaths narrow stiff edges ciliate, with small round naked auricles at the mouth, ligule short. Panicle leafy fairly large of spicate whorls with usually few spikelets in the whorls, which are 1-3 inches apart, rachis hairy. Spikelets narrow cylindric ¾-1 inch long. Empty glumes 3 to 5 ovate acute mucronate ribbed edged with black cilia. Flowering glumes lanceolate acuminate long mucronate, edged with black cilia. Palea as long or shorter narrow obtuse acute, or bimucronate, keels

2 ciliate, except the uppermost flower glabrous. Stamen tube at first thick then elongate. Anthers purple ending in a hairy point. Grain linear oblong. Beddone Fl. Syly. CCXXXIII. Gamble l.c. p. 69. Pl. 60. Hook. fil. l.c. 401. *Bambusa nigrociliata,* Buse Pl. Jungh. I. 389. Miq. Fl. Ind. Bat. 111, 416. *B. Bitung,* Hassk. Pl. Jav. rar. 42. *Gigantochloa nigrociliata,* Kurz. Ind. For. I. 345. *G. andamanica,* Kurz. For. Fl. Burm. II. 556.

Singapore: Galang (Ridley 8087), Thomson Road (8063), Ang Mo Kio (6682); Province Wellesley: Permatang Bertam (Ridley 6999). Distrib. India, Andamans, Sumatra and Java. I have only seen this in hedges in Singapore, and it is probably introduced.

2. O. SINUATA, Gamble l.c. 71. Pl. Leaves 10 to 12 inches long, 1-1½ inch wide oblong lanceolate acuminate base rounded almost cordate into a short petiole nearly half an inch long hairy, tip twisted scabrid, glabrous above pubescent beneath, sheaths faintly pubescent or glabrous with a short hairy ligule. Panicle of long slender spicate branches 2 feet or more long, rachis hairy, spikelets in round heads 1 inch apart and half inch through. Spikelets narrow conical ¼ inch long, acuminate pubescent. Empty glumes 2-3 ovate mucronate edges ciliate. Flowering glumes ovate mucronate but longer, mucro longer. Palea blunt or bifid. Keels 2 ciliate. Stamens exserted, tube thick thin elongate. Anthers narrow, point hairy. Ovary broadly ovate hairy, style long hairy. Hook. fil. Fl. Brit. Ind. VII. 401.

Johor: Gunong Panti (Ridley), Hulu Kahang (Kelsall): Sungei Ujong: Seremban (Cantley's Coll.). Endemic. "Buluh Minyak" used for baskets.

50. DENDROCALAMUS, Nees.

Arborescent bamboos with stout and long culms. Culm-sheaths broad with dark brown or white hairs, limb narrow lanceolate. Leaves lanceolate. Panicle usually large, the spikelets in globose distant heads ovate 2 to 5 flowered. Empty glumes 2-3 ovate acute. Flowering glumes similar. Palea of lower flower keeled, of upper one rounded glabrous. Lodicules usually absent. Stamens 6 filaments free. Ovary hairy. Stigmas usually simple. Grain small pericarp crustaceous or coriaceous.

Species 17. Indo-Malayan.

Stems 8-10 inches through.

Spikelets ovate acute ½ inch long .. .. 1. *D. giganteus.*

Stems about 2-3 inches through.

Spikelets small in distant heads.

Panicle branches very long .. .. 2. *D. flagellifer.*

Spikelets small in crowded heads. Panicle branches short .. .. .. 3. *D. pendulus.*

1. D. GIGANTEUS, Munro. Trans. Linn. Soc. XXVI. 150. Culms 100 feet long or less, 8 to 10 inches through dark green or grey green, thin walled covered with white waxy scurf when young internodes 15-16 inches. Culm-sheaths 20 inches long and as broad hard glabrous shining within limb 5 to 15 inches long 3½ inch broad edges waved, base decurrent into glabrous stiff brown wavy auricles, ligule stiff black, edge serrate. Leaves to 20 inches long 4 inches broad oblong suddenly acuminate unequal sided glabrous, hairy beneath when young, edges scabrous, sheaths glabrous with a callus, ligule broad fimbriate. Panicle very large, branchlets long curved with lax spikes of few spikelets 1 inch through, ½-1 inch apart rachis hairy below. Spikelets ½ inch or more long, minutely pubescent, ovate flattened spiny many flowered. Empty glume 1-2 ovate mucronate. Flower 3-6, glumes thin papery striate mucronate minutely hairy. Paleas of lower flowers blunt, upper ones acute bifid. Keels 2 ciliate. long hairy with a feathery purple stigma. Grain oblong obtuse hairy above. Gamble l.c. 87. Pl. 76. *Bambusa gigantea,* Wall. Cat. Bot. Gard. Calc. 79.

Malacca (Derry); Pahang; Perak: Larut Hills below Gunong Hijau (Ridley); Penang (Wallich). Endemic. In hillwoods.

2. D. FLAGELLIFER, Munro. Trans. Linn. Soc. XXVI. 150. Stems 20 to 30 feet tall 1⅝ to 3 inches through dark green, walls as much as an inch thick in old stems, nodes rough with short rootlets. Culm-sheaths 14 inches long with dark brown fur, limb lanceolate acuminate 16 inches long 2 wide at the base, mouth ciliate. Leaves oblong lanceolate 10-14 inches long 1½-2 inches wide glabrous apex smooth or scabrid base narrowed into a petiole ⅛ inch long. Sheaths smooth. Panicle of longer pendulous branches 2-6 feet long rachis pubescent grooved rather slender. Spikelets in small heads ¾ inch apart, ovoid green ¼ inch long pubescent. Glume I small ovate, II larger boat-shaped tip rounded, edges of both ciliate. Flowering glumes 4 ovate truncate or mucronate edges ciliate. Palea broad bifid with strongly ciliate edges. Lodicules usually none, sometimes 1 or 2 spathulate lanceolate. Stamens 4-6. Anthers rather broad linear apiculate yellow, filaments linear. Ovary ovoid hairy. Style hairy simple purple, rarely trifid. Gamble l.c. p. 91. Pl. 80.

Singapore: Ang Mo Kio (Ridley 6681) cultivated in Tanglin (10644, 5603, 3945); Malacca: Bukit Sabukor (Derry 101); Penang: Batu Feringhi Road (Curtis 3565, 3566), (Ridley 8363, 9460). Distrib. Tenasserim. Cultivated largely by Chinese for the edible shoots, and a useful bamboo for many purposes. It is known as "Buluh Betong." The whole plant perishes after flowering.

3. D. PENDULUS, Ridl. Journ. Roy. As. Soc. S. Br. Vol. XLIV. p. 210. Culms about 60 feet tall arched 3 inches through with long slender pendulous branches, dark green below glaucescent when young, walls rather thick, internodes 9 inches long, nodes rough with short projecting rootlets in the lower parts. Culm-sheaths 6 to 9 inches long hard covered at first with white woolly appressed in fascicles, limb narrow lanceolate acute 4 inches or more long caducous, auricles large dark red with long white cilia. Leaves lanceolate oblong acuminate thin glabrous 5 to 6 inches long $\frac{3}{4}$ to inch wide, base broad truncate edges scabrid at the tip, petiole short thick $\frac{1}{16}$ inch long, sheaths minutely pubescent, tip truncate edges scabrid, ligule very short with few or no cilia at the mouth. Panicle of simple spikes of heads on the ends of the leafy branches with occasionally 1 or more branchlets. Heads of spikes crowded $\frac{1}{2}$ inch long with broad sheaths yellow with a short limb at the base. Spikelets $\frac{1}{8}$ inch long glabrous shining oblong cylindric numerous one flowered. Empty glumes ovate glabrous 2. Flowering glumes longer lanceolate. Palea as long 2 nerved not keeled convolute lanceolate. Lodicules 0. Stamens 6. Anthers oblong minutely apiculate, filaments narrow linear free. Ovary conic short hairy. Styles simple hairy.

Selangor: Pahang Track (Ridley 8482), at an altitude of 2000 feet. Endemic. This superb bamboo has long been cultivated in the Botanic Gardens, Singapore, but has not flowered there. The flowers are described from plants seen in the hill forest in Selangor.

51. DINOCHLOA, Buse.

Long climbing bamboos with slender much branched stems. Culm-sheaths thick loosely clasping, wrinkled at the base where a broad leathery ring remains after it falls off, limb long. Leaves moderately large. Panicle very long slender compound of very small heads of minute spikelets. Spikelets 1 flowered rachilla articulate not produced. Empty glumes 1 to 4 broad very blunt. Flowering glume slender. Palea convolute as large not keeled. Lodicules none or six. Stamens 6 free short. Ovary ovate glabrous. Style short. Grain ovoid acuminate.

Species 3. Burma, Andamans and Malay Islands.

Empty glumes 1-2	*D. Tjankorreh.*
Empty glumes 4	*D. montana.*

D. TJANKORREH, Buse. Miq. Pl. Jungh. 388. Culms very long scrambling, 1 inch through or much less, smooth, branches slender in tufts from the nerves. Culm-sheaths cylindric gradually attenuate towards the mouth not auricled sprinkled with minute white bristles limb ovate lanceolate acuminate, ligule broad entire or slightly toothed.

Leaves lanceolate acuminate 6-10 inches long, 1-1½ inch wide, tip subulate edges scabrid, sheaths glabrous when old, striate with a callus and long stiff white cilia at the mouth. Panicle very long slender with long wiry branches, rachis smooth striate, marked at the nodes with a ring formed by the bases of fallen bracts. Clusters of spikelets very small with few fertile spikelets and many empty glumes. Spikelets minute $\frac{1}{10}$ inch long ovate glabrous 1 flowered. Empty Glumes 1 or 2, with a few lower ones below the articulation broad obtuse. Flowering glumes similar. Palea rounded convolute.Filaments very short. Anthers acute. Ovary ovate. Style thick, stigma bifid not plumose. Miq. Fl. Ind. Bat. III. 415. Munro. l.c. 153. Pl. V. Gamble l.c. 112. p. 98. *Bambusa scandens,* Bl. Nees. Flora VII. 291. *Nastus Tjankorreh,* Schultes. Syst. Veg. VII. 1358. Kunth. Enum. I. 430. *Chusquea amplopaniculata,* Steud. Syn. 337. Miq. l.c.c.

Dindings at Lumut (Ridley 3112). Distrib. Andamans and Malay Islands. "Buluh Akar."

D. MONTANA, Ridley Journ. Roy. As. Soc. S. Br. Vol. XLIV. p. 210. Culms long and scrambling smooth branches in whorls wiry. Leaves lanceolate acuminate, 8 inches long, by 1 inch wide glabrous, tip scabrid, base unequal slightly attenuate into a short petiole ⅛ inch long sheaths smooth flattened striate with a low callus minutely pubescent not ciliate. Panicle long rachis wiry pubescent with distant heads of spikelets 2½ inch apart. Spikelets ⅛-¼ inch long straw coloured one flowered. Empty glumes -4 ovate obtuse strongly keeled submucronate rachilla stout flexuous. Flowering glume lanceolate ribbed minutely mucronate. Palea oblong with 2 nerves, not keeled or ciliate. Lodicules 6, spathulate oblong strongly nerved edges ciliate. Grain oblong beaked narrowed at the base channelled along one side, beak minutely hairy. Penang Hill (Ridley 7064, 7265, 10171). Forming dense masses at an altitude of 3000 feet.

52. SCHIZOSTACHYUM, Nees.

Bamboos, usually slender erect or climbing. Culms smooth thin walled. Culm-sheaths short with small auricles. Leaves broad or narrow petioled. Panicle terminal, of spike-like branches bearing heads of spikelets often reduced to a single head of spikes. Spikelets slender fascicled, cylindric acute. Empty glumes 1 to 3 narrow, mucronate rachilla elongate between them. Flowering glumes 1-2 convolute. Palea similar not keeled. Lodicules 0-4 narrow. Stamens 6, filaments free. Ovary narrow, the pericarp produced into a beak enclosing the style. Stigmas 3. Grain ovoid beaked with a sloping beak. Pericarp crustaceous seed rounded.

Species 17. Malay Peninsula and Islands and China one from Madagascar.

Heads of spikelets and simple spikes.

Solitary or 2 or 3 .. .. 1. *S. tenue.*
Heads 4 to 12 in a simple spikes .. .. 2. *S. chilianthum.*

Spikes panicled.

Spikes under one inch long.

Lodicules 0 .. .. 3. *S. Blumei.*
Lodicules 3 .. .. 4. *S. Zollingeri.*

Spikelets one inch or more long.

Stems 20 feet. Spikelets 1 inch long .. 5. *S. latifolium.*
Small plant. Spikelets 1½ inch long very narrow and hairy .. .. .. 6. *S. aciculare.*

1. S. TENUE, Gamble l.c. 114. Pl. 100. A slender bamboo culms weak 12 feet long ½ inch through green fistular. Branches very slender in whorls. Culm-sheaths oblong glabrous about 3 inches long, mouth strongly bearded truncate limb triangular acuminate smooth 2½ inch long. Leaves narrow linear lanceolate light green 4 to 6 inches long ½-¾ inch across base broad, petiole short apex subulate scabrid on the edges, sheaths smooth with a broad callus and narrow ligule. Inflorescence a terminal spike of one or occasionally two or three heads with few spikelets with one or more chaffy bracts ½ inch long or less. Spikelets narrow acuminate. Empty glumes 1-2 ovate acuminate mucronate 5-7 nerved. Flowering glumes longer. Palea longer, 2 keeled, glabrous. Lodicules 3 ovate acute hairy within. Grain ovate long beaked, beak bent to one side, ¼ inch long with the beak half an inch. Hook. fil. Fl. Brit. Ind. VII. 415. *Schizostachyum elegantissimum,* Kurz. Ind. For. I. 348. *Bambusa elegantissima,* Hassk. Pl. Jav. Rar. 42. *Beesha elegantissima,* Munro. Trans. Linn. Soc. XXVI. 146.

Johor: Kota Tinggi, River Bank, Tebrau River (Ridley 11416); Pahang: Kuala Berar (Ridley 5596); Malacca: Ayer Panas, Bukit Tungul (Ridley 560); Kemaman (Vaughan Stevens). Endemic. River Banks. I doubt whether this is more than a form of *S. chilianthum.*

2. S. CHILIANTHUM, Kurz. Ind. For. I. 348. Journ. As. Soc. Beng. XXXIX. II. 88. Stems usually slender 15 to 20 feet tall ½ inch through. Branches slender in dense whorls at the nodes. Culm-sheaths 3 inches long smooth truncate with light brown pubescence mouth with rather a thick edge fringed with stiff pale bristles lower edge fringed with short straight bristles, limb triangular acuminate with a broad base, 1½ inch long. Leaves narrow lanceolate acuminate light green 9 to 12 inches long ½ to 1 inch wide midrib fairly strong edges scabrid, petiole very short mouth of sheath with a

few long pale bristles, edge fringed, ligule very short. Heads 4 to 12 in the spike ½-1 inch apart rachis smooth slender glabrous. Spikelets ½ inch long. Empty glumes ovate mucronate ribbed glabrous. Flowering glumes lanceolate acuminate longer edges pubescent or glabrous. Gamble l.c. 115. Pl. 101. Hook. fil. Fl. Brit. Ind. VII. 416. *Chloothamnus chilianthus,* Buse Pl. Jungh. 387. Miq. Fl. Ind. Bat. III. 415. *Melocanna gracilis,* Munro. Trans. Linn. Soc. XXVI. 133.

Singapore (Wallich 5032), Bukit Timah Road (Ridley 10939); Johor: Serom (Ridley 10990); Malacca: Batang Malacca (Derry 192); Selangor: Sepang Road (Ridley 7780); Province Wellesley: Krian (Ridley 9385). Distrib. Siam (Curtis 3236). Sumatra, Java. River banks and damp spots. "Buluh Rappen," "Buluh Akar."

3. S. Blumei, Nees. Agrost. Braz. 535. Stems up to 30 feet tall hollow and fragile glabrous. Culm-sheaths slightly attenuate to the mouth with white bristles mouth hispid ciliate, limb leafy erect. Leaves 9 or 10 inches long 1-1¾ inch across, oblong lanceolate base rounded or narrowed, petiole ¼ inch, tip acuminate subulate scabrid on both surfaces, hispid beneath sheaths smooth striate keeled, pubescent when young, mouth armed with few white bristles. Panicles slender simple spicate or branched spikelets ½ inch long narrow cylindric subulate crowded clustered spreading subtended by chaffy bracts. Empty glumes 2 oblong, mucronate glabrous separated from each other and the flowering glumes by ciliate rachillae. Flowering glumes similar but much longer. Palea 1 or 2 convolute glabrous. Anthers elongate blunt. Ovary ellipsoid with a long beak. Lodicules 0. Kunth.Enum. I. 435. Ruprecht. Bamboo 43. t. XVI., XVII. fig. 4. Munro. Trans. Linn. Soc. XXVI. 136. Gamble l.c. 116. Pl. 102.

Singapore: Seletar (Ridley 445, 6114). Distrib. Java, St. Barbe Isle (Langlasse). Native name "Buluh Juron," perhaps introduced.

4. S. Zollingeri, Steud. Syn. Glum. 332. Stems about 20 feet tall smooth green. Culm-sheaths 4 inches long, limb triangular acute 1 inch. Leaves lanceolate acuminate 6-12 inches long -1¾ inch wide, glabrous above pubescent beneath sheath smooth armed with long cilia at the mouth, and along the edges. Panicle 8 inches long of about 10 heads of spikelets half an inch apart on a slender smooth rachis, spikelets half an inch long. Empty glumes ovate keeled mucronate edges ciliate. Fertile glumes longer lanceolate mucronate edges ciliate lodicules 3 ovate subacuminate strongly nerved at base edges fringed with silky hairs. *Sc. Blumei,* Miq. Fl. Ind. Bat. III. 424 (not Nees.). *M. Zollingeri,* Munro. Trans. Linn. Soc. XXVI. 134.

Singapore: Bukit Timah Road (Ridley 6116), Yeo Chu Kang (11294); Muar: Bukit Muar (Feilding H. B. S. 4420); Johor: Road

to the Reservoir (Ridley 9177); Malacca (Cantley's Coll.); St. John's Island (South of Singapore) (Ridley 11360); Negri Sembilan: Pantai (Ridley 10069). Distrib. Java. A stouter plant than *S. chilianthum*. I am not sure that it is wild in all of the above localities. "Buluh Tulo."

5. S. LATIFOLIUM, Gamble l.c. p. 117. Pl. 103. Stems 20 feet tall 1½-3 inches through internodes 2 to 3 feet long walls comparatively thin. Culm-sheaths very large over a foot long, covered with white hairs in fascicles between the nerves. Leaves long acuminate stiff 9-18 inches long, 3 inches wide, glabrous edges scabrid at tip, petiole thick ½ inch long wrinkled, sheaths keeled sheaths smooth nearly glabrous with a broad callus above. Ligule oblong obtuse with a few fugacious cilia. Panicle simple or little branched 12-18 inches long of heads of spikelets 1 inch apart on a rather slender hairy rachis. Spikelets cylindric subulate, 1 inch long numerous. Bracts at the base of head broad. Flowers 2 one on a clubbed rachilla very small. Empty glumes ovate mucronate. Flowering glumes longer all minutely pubescent and ciliate on the edges. Palea lanceolate convolute bimucronate. Lodicules 3-4, lanceolate ciliate. Anthers long narrow penicillate. Ovary glabrous long beaked, style with 3 plumose stigmas.

Pahang: Kota Glanggi (Ridley 5602), Tanjong Antan; Selangor: Pahang Track to the Gap, 2-2700 feet alt. (Ridley 8457, Curtis 3745), Ginting Bidai (Ridley 7787). Endemic. Forming a good part of the bamboo jungle of the Selangor Hills "Buluh Telor." The Pahang plant has a glabrous rachis to the panicle.

6. S. ACICULARE, Gamble l.c. p. 117. Pl. 104. A dwarf bamboo with slender culms branches very slender. Leaves oblong acuminate 9 inches long 1¼ inch wide, bases rounded, passing into a petiole ¼ inch long, glabrous or pubescent tip ensiform scabrid sheaths ribbed with stiff white cilia at the mouth. Panicle simple over a foot long slender rachis glabrous, heads of spikelets 1-1½ inch apart. Spikelets very narrow, 1 inch or more long cylindric subulate, with 1 fertile flower and one abortive one on a slender rachilla. Bracts few and short. Empty glumes ovate mucronate pubescent, with a short rachilla above them. Flowering glumes linear long, mucronate covered with appressed hairs especially at the tip. Palea as long as flowering glume convolute. Lodicules 1-4 lanceolate glabrous. Stamens, anthers very long and narrow apiculate Ovary ovoid narrow long beaked glabrous, style long, stigmas 3- plumose.

Malacca: Sungei Hudang (Ridley 5600), Bukit Kupayong (Cantley's Coll.); Negri Sembilan: Kuala Pedas (Ridley 10065); Dinding: Lumut (Ridley 10312); Selangor: Ginting Bidai (Ridley 7788). Distrib. Sumatra (Curtis 3558).

The Sungei Hudang plant is referred to *S. latifolium* by Gamble, but I think is undoubtedly this species. Curtis Sumatran plant, from Indragiri is I think this, but the flowers are very young. He says it is a thin climbing plant growing in immense abundance in swampy places and called "Buluh Jalu."

53. Ochlandra, Thwaites.

Shrubby reed-like bamboos. Culms thin walled erect internodes long, sheaths thin persistent with small auricles. Leaves rather broad many nerved, sheaths short, except in 1 species. Inflorescence a terminal spike or panicle. Spikelets in verticals partly fertile and partly sterile, 1 flowered usually large. Empty glumes 2-3 usually mucronate. Flowering glume similar mucronate. Palea membranous not keeled. Lodicules 1-several, conspicuous usually appressed to the stamens. Satmens 6 to 120, filaments free or connate. Ovary narrow, style long. Stamens 4 to 6 plumose, grain very large ovoid long beaked with a thick fleshy pericarp.

O. Ridleyi, Gamble l.c. p. 127. Leaves 9-10 inches long 1-1½ inch wide oblong lanceolate narrowed at the base into a distinct petiole ⅛ inch long glabrous tip acuminate scabrous, sheaths short glabrous striate, ending in a narrow callus, with short long ciliate auricles, ligule short. Inflorescence spicate. heads crowded, subdistichous bracteate. Bracts ovate truncate, fimbriate with an imperfect ovate blade. Spikelets about 1 inch long, several sterile few fertile. Empty glumes 1-2 ovate truncate long mucronate covered above with appressed hairs. Flowering glumes 1-2 similar longer. Paleae 2 not keeled, outer narrow bimucronate hairy at tip, inner shorter tip rounded. Lodicules 6 to 10 lanceolate or spathulate, subacute sometimes forked, ciliate above. Stamens free or connate usually 6, 3 longer blunt, 3 shorter acute. Ovary linear narrow enclosed in an enlarged perigynium 2-4 cleft at tip.

Singapore: Bukit Mandai (Ridley 4620); Johor: Bukit Muar (Feilding). "Buluh Kasap." The Malays say it has been introduced from Java and I never saw it anywhere where it looked wild.

VOL. III.

Errata Vol. III.

P.	5	line 3.	pupurea read purpurea.
	9	„ 14.	or read of.
	13	„ 2.	marquis read margins.
	21	„ 3.	A minor etc. substitute Tuber.
	„	„ 4.	A Prainii, Hook. f. Fl. Brit. Ind. VI. 516.
	38	„ 28.	Hedereacea read Hederacea.
	„	„ 38.	hederaceous read hederaceus.
	46	„ 2.	Roxburg read Roxburgh.
	„	„ 28.	Photos read pothos.
	48	„ 19.	lancefolms read lancefolius.
	„	„ 31.	Roxbughii read Roxburghii.
	53	„ 20.	globose read globosa.
	„	„ 21.	„ „
	63	„ 1.	stoloniferous read stoloniferus.
	„	„ 14.	Platystlis read platystylis.
	68	„ 21.	260, 600 not, read 260, 600 not of Linnoeus.
	73	„ 10.	cyhuidrostachys read cyhudrostachys.
	75	„ 21.	plataginea read plantaginea.
	80	„ 1.	jencoides read juncoides.
	„	„ 13.	Furiena read Fuirena.
	95	„ 2.	tenea read tenera.
	„	„ 14.	S. tetrogonus read Scirpus tetragonus.
	96	„ 14.	complanalatus read complanatus.
	105	„ 2.	linaer read linear.
	„	„ 15.	Pandanophyllum read *Pandanophyllum miquelianum*.
	107	„ 11.	rust-like read rush-like.
	112	„ 42.	S. read Steud.
	115	„ 9.	borneesis read borneensis.
	117	„ 1.	*Delete* from Ridl. to Vol. and substitute: n. sp.

126	„	7, 16	and throughout the Gramineae for Trim. read Trin. except quotations Trim. Fl. Ceyl.
129	„	18.	3 to inches long read 3 to 8 inches long.
139	„	24.	*aquatium* read aquaticum.
140	„	41.	altissum read altisimum.
142	„	41.	palens read pallens.
146	„	38.	Ischoemen read Ischaemum.
148	„	33.	S. hexandra S. W. read L. hexandra Sw.
149	„	20.	artistata read aristata.
„	„	23.	Wenld read Wendl.
150	„	3.	Authoxanthum read Anthoxanthum.
152	„	26.	Diandum read diandrum.
„	„	„	Ibs. read Obs.
158	„	11.	Cao read Cav.
167	„	12.	opux read opusc.
„	„	13.	trivalivis read trivalvis.
173	„	9.	S. Dactylon read C. Dactylon.
„	„	18.	dactylom read Dactylon.
192	„	9.	¾ to inch wide read ¾ to 1 inch wide.

Materials for a Flora of the Malayan Peninsula.

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